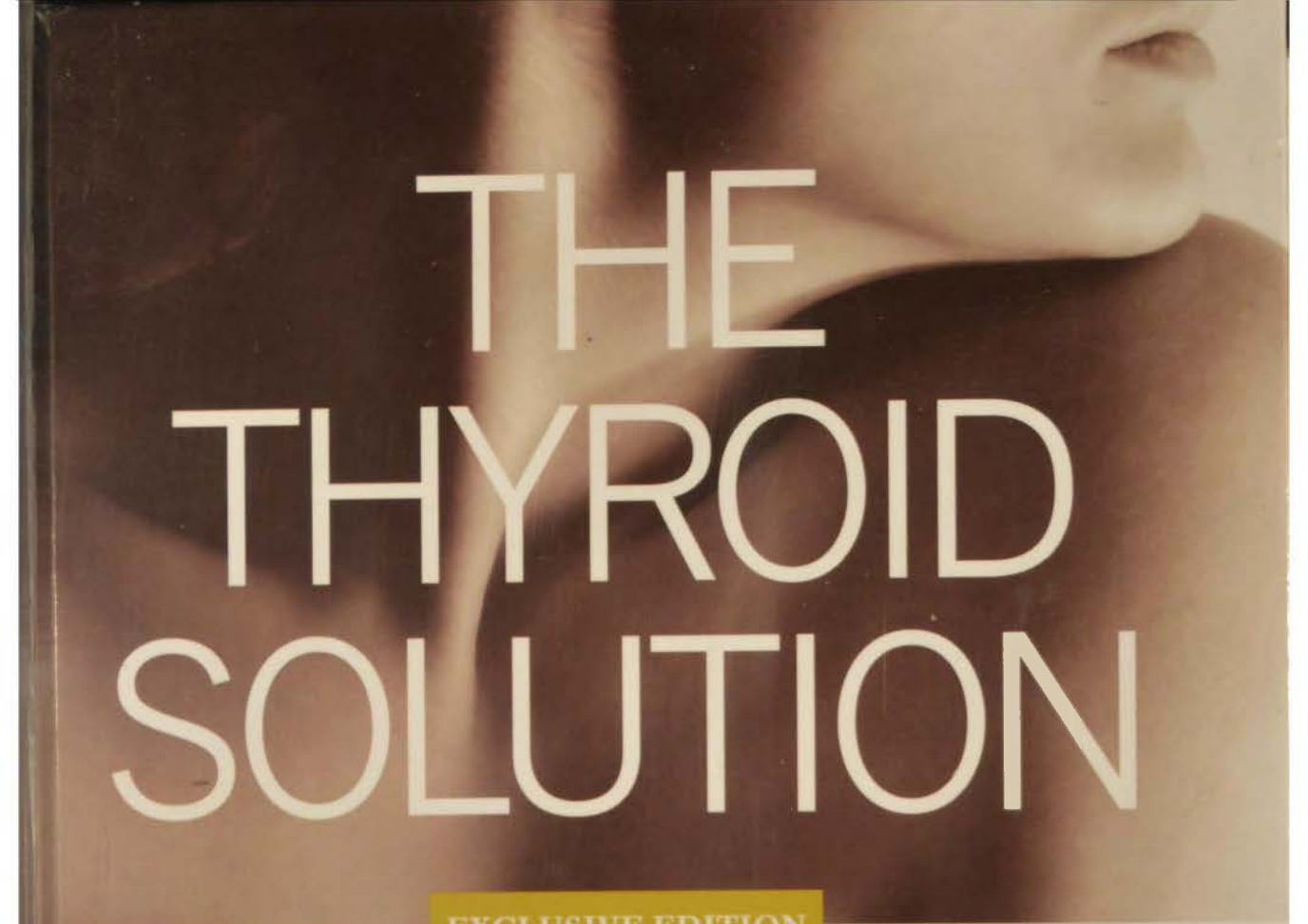




THE THYROID SOLUTION

EXCLUSIVE EDITION

The Doctor-Developed,
Clinically Proven Plan
to Diagnose Thyroid Imbalance
and Reverse
Thyroid Symptoms

Tired? Forgetful? Depressed or Anxious? Can't Lose Weight?
You Could Be at Risk!

RIDHA AREM, MD

"Quite simply the best thyroid book on the market today . . . Dr. Arem validates what I have found in my practice for more than 20 years, especially the importance of T3. I highly recommend this book."

—Elizabeth Lee Vliet, MD, Author of *Screaming to Be Heard: Hormone Connections Women Suspect . . . and Doctors Still Ignore*

"Clear, comprehensive, and incredibly useful . . . the best thyroid resource I have ever read."

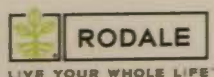
—Kathleen DesMaisons, PhD, Author of *Your Last Diet!*

THE THYROID SOLUTION is a must-read for anyone who suffers from a thyroid condition as well as those who think they're at risk. Written by Dr. Ridha Arem, a medical pioneer and leading authority in the field of thyroid research, this groundbreaking book offers a practical program for maintaining thyroid health through diet, exercise, and stress control. Dr. Arem also presents his revolutionary medical plan, which combines two types of hormone treatments and produces astounding results.

IN THIS EXCLUSIVE EDITION, YOU'LL DISCOVER:

- What's behind the underdiagnosis of thyroid imbalance
- How stress can trigger and perpetuate autoimmune thyroid conditions
- The surprising connection between low-grade hypothyroidism and heart disease—and practical strategies for minimizing cardiovascular risk
- How thyroid imbalance can lead to a wide range of mood and anxiety disorders
- How thyroid hormone affects weight, metabolism, and dietary habits
- The role of thyroid dysfunction in health concerns unique to women, such as PMS, menopause, and postpartum depression
- What you can do when you suspect hypothyroidism, even though your test results are normal

Featuring inspiring patient histories and candid interviews that document the dramatic success of Dr. Arem's bold new treatments, *The Thyroid Solution* is the essential resource for doctors and patients on maintaining thyroid health.



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T H E
T H Y R O I D
S O L U T I O N

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THYROID
S O L U T I O N

- The Doctor-Developed, Clinically Proven Plan to Diagnose
Thyroid Imbalance and Reverse Thyroid Symptoms

RIDHA AREM, M.D.



Notice

This book is intended as a reference volume only, not as a medical manual. The information given here is designed to help you make informed decisions about your health. It is not intended as a substitute for any treatment that may have been prescribed by your doctor. If you suspect that you have a medical problem, we urge you to seek competent medical help.

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Internet addresses and telephone numbers given in this book were accurate at the time it went to press.

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*To the very special people who enriched my heart with love:
my very dear parents, my beloved wife, and my two wonderful sons.
It is my hope that this book will inspire my sons to dedicate
themselves to helping and loving others.*

CONTENTS

Preface	ix
Acknowledgments	xiii
Introduction	xv

PART I

The Emerging Mind-Thyroid Connection: How a Tiny Endocrine Gland Intimately Affects Your Mood, Emotions, and Behavior

1	Thyroid Imbalance: A Hidden Epidemic	3
2	Stress and Thyroid Imbalance: Which Comes First?	20
3	Hypothyroidism: When the Thyroid Is Underactive	37
4	Hyperthyroidism: When the Thyroid Is Overactive	56
5	Thyroid Imbalance, Depression, Anxiety, and Mood Swings	77
6	Medicine from the Body: Thyroid Hormone as an Antidepressant	100

PART II

No, You Are Not Making It Up: Common Emotional and Physical Interactions

7	Weight, Appetite, and Metabolism: The Thyroid's Actions	119
8	Hormones of Desire: The Thyroid and Your Sex Life	142

9	"You've Changed": When the Thyroid and Relationships Collide	157
10	Overlapping Symptoms: Fatigue, Chronic Fatigue, Hypoglycemia, and Fibromyalgia	170

PART III

Women's Thyroid Problems: Your Symptoms Are Not All in Your Head

11	Premenstrual Syndrome and Menopause: Tuning the Cycles	193
12	Infertility and Miscarriage: Is Your Thyroid a Factor?	211
13	Postpartum Depression: The Hormonal Link	220

PART IV

Diagnosing and Treating Common Thyroid Disorders: The Journey to Wellness

14	Getting the Proper Diagnosis	231
15	Uncovering Covert Hypothyroidism	247
16	Treating the Imbalance	265
17	Curing the Lingering Effects of Thyroid Imbalance	291
18	The New T4/T3 Protocol: "It Made Me Feel Better All Over"	314
19	Living a Thyroid-Friendly Life: Healthful Choices Day by Day	327
20	Living with Thyroid Eye Disease	350
21	Thyroid Cancer: Curable but Anguishing	364
22	Eight Steps for the Future: How to Promote a Better Understanding of Thyroid, Mind, and Mood	385
	Notes	391
	Resources	429
	Suggested Readings	441
	Index	443

P R E F A C E

At the time that the first edition of this book was released, patients suffering from thyroid imbalance, whether or not they had been diagnosed, had very limited resources to learn about their condition and understand and validate their symptoms and suffering. Millions of thyroid patients throughout the world were misunderstood, misdiagnosed, and made to feel like their symptoms were all in their heads. The link between thyroid imbalance and mood disorders, including depression, and the role played by thyroid hormone in regulating mood, emotions, behavior, appetite, and women's hormonal health were seldom expressed in books or by the media.

Some thyroid patients chatted on the Internet, sharing their experience to try to understand their symptoms, and refused to believe that they were crazy. Books about thyroid disorders basically chronicled the symptoms and signs of the conditions in a medical-textbook format, without describing the real-life issues and challenges faced by thyroid patients, or providing ways to understand and cure thyroid imbalance.

When *The Thyroid Solution* was first published, I received thousands of e-mails from patients throughout the world, thanking me for writing the book. I continue to hear how it has changed the lives of so many people suffering from thyroid disorders. Because my vision on the impact of thyroid imbalance on a person's health and life, and my comprehensive and futuristic approach to caring for thyroid patients is beyond what has been taught by conventional medicine, many conventional doctors, including endocrinologists, expressed some disagreement with my vision and approach—and I was expecting this.

Over time, however, increasing numbers of these physicians have come to understand my vision and to adopt my successful approach in caring

for thyroid patients. Increasingly, thyroid patients are not treated based on laboratory testing only. More doctors now listen carefully to their patients' symptoms and are more aware that suffering may linger even after blood tests become normal with treatment. More doctors show compassion and provide more ways to alleviate the symptoms. But despite the progress we have witnessed, it is still not enough.

Since the first edition of this book, I have gained more knowledge from both the patients I cared for and from the expanding medical research published in the past few years. The first edition had triggered a great interest among colleague researchers in understanding further how the thyroid system affects our health and physical and mental well being, and in validating further the benefits of the comprehensive mind-body approach to treating patients suffering from a thyroid imbalance. Major advances have been made in recent years in recognizing the importance of healthy nutrition, the use of mind-body techniques, the consumptions of vitamins and antioxidants, and the fine tuning of medications while caring for thyroid patients. We now know more about the link between thyroid disorders and other autoimmune conditions such as pituitary dysfunction, growth hormone deficiency, fibromyalgia, and adrenal insufficiency, to name but a few. We now know more about female hormonal issues and how they are affected by the thyroid gland, about the benefits of hormonal treatments, and about how to use hormonal replacement therapy. We also know more about how weight is regulated, how the thyroid system affects the complex regulation of appetite and metabolism, and how thyroid patients can win the weight battle. We have gained more knowledge in the field of depression, anxiety, and mood-swing disorders, and the relationship between these disorders and the thyroid system. Many newer medications and treatment methods have become available to treat mental disorders, which the thyroid patient needs to know about. We also know more about what triggers and perpetuates autoimmune reactions on the thyroid, the roles of stress, environment, and vitamins and antioxidants in maintaining thyroid health. The physicians who care for thyroid patients now know that we should treat not only the thyroid and merely correct blood tests but also provide the best support possible to both the immune system and the mind.

The book has been extensively revised and rewritten to include this knowledge, and the many new practical ways for thyroid patients to feel at their best and reach and maintain optimal wellness. Over the past few years, I have refined the T4/T3 combination treatment protocol for hypothyroid patients who've had lingering symptoms of fatigue and depression. I have learned more about the importance of the ratios of the two hormones for maximum benefits. In this new edition, you will learn how using com-

pounded slow-release T3 instead of synthetic T3 will allow your doctor to titrate the dose of T3 in a more precise way for curing your symptoms.

You will learn more about the ongoing controversy concerning thyroid blood testing, how you can be easily misdiagnosed, and how to prevent this from happening. This book will teach you that you may be one of the many millions of people suffering from an underactive thyroid despite having normal standard blood tests, and how to get the proper diagnosis and treatment for this often overlooked condition.

Thyroid imbalance is in fact much more common than it was estimated to be a decade ago. Despite an increased awareness of how common thyroid imbalance is in our population, despite the many more books on thyroid disorders that are now available, despite the many articles published in health and women's magazines and on the Internet, and despite all the interest that has been generated since the publication of the first edition, there is still more to be done with respect to educating both the public and the medical community on this truly hidden epidemic. It is my hope that this new and special edition of *The Thyroid Solution* will contribute to enhance knowledge on these issues and will help more people throughout the world.

ACKNOWLEDGMENTS

So many people have made the writing of this book possible. First of all, my deepest gratitude goes to the patients who have taught me what books and articles could not and to those who were kind enough to share their experiences with me for this book. These patients have made an invaluable contribution toward helping others. The hard work and dedication of researchers and psychiatrists from around the world who have studied thyroid disease were critical in enabling me to understand and interpret the intricate interactions between the mind and thyroid. A special thank-you goes to my mentor, Professor Raymond Michel, who in the early 1950s was one of the researchers who discovered T₃, the most active form of thyroid hormone. Professor Michel ignited my passion for learning about the role thyroid hormone plays in our bodies.

There is no doubt that without the unshakable support and understanding of my wife, Noura, I would not have been able to carry out the project of writing this book. I would like to thank my administrator, Julie Murphy Pieper, for her continued support. I am grateful to my assistants, Stephanie Sterie, and Kimberly Garland. They did an outstanding job helping me with the gathering of the tremendous amount of research, typing, and organizing the second edition of this book.

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INTRODUCTION

In the space of a week a few years ago, I saw two patients, Stacy and Murielle, whose experiences ultimately inspired me to write this book.

Stacy came to me for a second opinion on her ailment, a condition called Graves' disease, which results in an overactive thyroid. She asked me to recommend a book for "civilians" dealing with the psychological and emotional aspects of thyroid disease. Stacy had already studied all the books suggested by the Thyroid Foundation of America, the principal patient resource organization for thyroid conditions. She had also browsed through the health and medicine sections of a number of large bookstores. Stacy had been suffering from her thyroid condition for four years, and the consequent mental and emotional symptoms had contributed to the collapse of her marriage and the loss of her job. She was determined to learn how her thyroid condition had affected her mind and how she was likely to feel in the future. Although I mentioned a number of scientific studies, I realized that I knew of no popular books directed at a general audience that addressed this important issue.

Shortly after Stacy's visit, I saw Murielle, a young psychologist who was suffering from depression. "My energy level is so low," she told me. "It seems like all I can do is just to try to stay focused because I'm tired. I want to work less, and I've come to dread doing really hard, complex cases with a lot of personality problems."

Although her background gave her some experience in dealing with questions of mind and mood, Murielle was unsure about the cause and cure of her own depression. Because she was aware that depression and tiredness could also be symptoms of a thyroid imbalance, she began to wonder whether her symptoms were thyroid related. Unlike Stacy, Murielle turned out not to have a dysfunctioning thyroid gland. Instead, she was suffering from a brain chemistry disorder related to an imbalance of thyroid hormone

levels in the brain. Although Murielle had tried several antidepressants, she wasn't able to regain fully her happiness, energy, and sense of overall well-being until she began taking a thyroid hormone medication in addition to an antidepressant. Thus, even though Murielle did not have a thyroid condition per se, for her, thyroid hormone treatment along with an antidepressant was the solution for full recovery.

In the course of my treatment of her, Murielle asked me a number of good questions, among them where she could go to learn more about how the thyroid and the hormones it releases into the bloodstream affect the brain and nervous system, thus directly or indirectly altering mood, emotions, and behavior. Again, there was no book I could recommend that addressed, in layperson's terms, the intricate relationships among thyroid ailments, emotions, and thought patterns. My increasing awareness of the desperate need of patients like Stacy and Murielle to learn more about their condition compelled me to begin writing this book.

The intent of *The Thyroid Solution* is twofold. First, it aims to introduce readers to the many ways that the thyroid can affect brain chemistry. In recent years, scientists have made remarkable headway in showing how brain chemicals, such as the well-known neurotransmitter serotonin, can influence everything from mood to appetite. Yet even many physicians do not understand how essential thyroid hormones are to normal brain chemistry. It is time for thyroid hormones to be recognized as key brain chemicals, whose actions and effects are similar in many ways to those of serotonin and other neurotransmitters. These effects include relieving emotional states such as depression, as Murielle discovered, as well as aiding other communications between mind and body, including regulating metabolism, sexuality, fertility, appetite, weight, and mental clarity.

Second, this book aims to provide thyroid patients, as well as their partners, families, and friends, with useful, practical information that may help them understand and cope with the difficulties and emotional suffering induced by thyroid diseases. *The Thyroid Solution* details a mind-body program that will help you, the patient, halt the escalation of symptoms and become well again. It also teaches you how to work with your doctor to obtain an accurate diagnosis and to achieve and maintain an optimal thyroid balance, with treatment.

One in ten Americans—more than 20 million people—suffers from thyroid dysfunction. Thyroid hormone imbalance, along with its fraternal twin, clinical depression, may be the common cold of emotional illness. Yet most victims don't realize that thyroid ailments have *any* mental or emotional components. They just know that they don't feel like themselves—and haven't felt right for a long time. This book is directed to these individuals, and I am confident that it can help them regain their emotional health.

Addressing Conditions and Concerns

Like any organ in the body, the thyroid gland can be affected by a wide range of disorders—from the common and rampant condition called Hashimoto's thyroiditis, the leading cause of hypothyroidism (underactive thyroid), to rare and unusual conditions such as Riedel's thyroiditis (a condition in which fibrous tissue replaces healthy thyroid tissue). The main function of the thyroid gland is to produce thyroid hormone, a crucial chemical that affects metabolism and other bodily functions. Thyroid hormone is also part of the brain chemistry mix that regulates moods, emotions, cognition, appetite, and behavior.

A complete home reference book on thyroid disease would describe in detail all thyroid conditions, both unusual and common. But that would leave little room to detail the hidden and often misunderstood effects of the most common thyroid hormone imbalances, which affect millions of people. For that reason, the main focus of this book is on conditions that result in the types of thyroid hormone imbalance most people are concerned about. Nevertheless, I have included useful information on various thyroid conditions, including goiters, lumps, thyroid cancer, thyroid eye disease, and many others. If you suffer from one of these conditions, this information will help guide you as you seek a diagnosis or receive treatment.

The Thyroid Solution also differs from many other thyroid books in its depiction of thyroid patients and their real-life challenges and concerns as patients have revealed them to me in my more than fifteen years of working with them and helping them to heal. This is the first book to explain the hidden suffering that many patients have difficulty expressing and the first to provide new ways of helping address and heal this suffering. It is my hope that their stories will help you identify symptoms of your own that you may have dismissed as unrelated to a thyroid condition. Further, their stories of regaining physical, mental, and emotional wellness may inspire you to find the answers and treatment you need.

How You Can Use This Book

Part I of *The Thyroid Solution* describes the emerging knowledge about the thyroid-mind connection and how thyroid imbalance is likely to affect not only your physical health but also your mood, emotions, and behavior. It highlights the types of thyroid conditions that could result in a thyroid imbalance and outlines their potential effects on your emotional and physical health. Here you'll find out how to recognize hypothyroidism (underactive thyroid) and hyperthyroidism (overactive thyroid) and work with your physician to obtain the proper diagnosis. Part I also shows you how neuroscientists have come to view the thyroid gland as an "annex to the brain," since the

brain uses thyroid chemicals for a wide range of brain functions. You will also learn how dealing with stress, maintaining a healthy and stable mood, and coping with life depend to a great extent on whether the thyroid functions properly and on whether the right amount of thyroid hormone is properly delivered and dispersed in the brain. Stress and thyroid imbalance go hand in hand: thyroid imbalance affects your perception of stress, and stress can trigger an imbalance. This relationship between the thyroid, the immune system, and brain chemistry is intricate, and stress management is important in preventing flare-ups of thyroid imbalance. You will learn how the effects of thyroid imbalances are both physical and mental, although many physicians tend to focus only on the physical effects. You will also learn the many deplorable reasons why thyroid imbalances often remain undiagnosed and misdiagnosed. One reason is that patients suffering from a thyroid imbalance often have symptoms of mood disorders and anxiety and therefore may be misdiagnosed as depressed or anxious. A brain thyroid hormone imbalance can be caused by either a malfunctioning gland or a disruption in the way the hormone is dispersed in the brain. Either way, different types of depression and anxiety disorders can result. Thyroid hormone balance in the brain is crucial for maintaining stable mood, emotions, and behavior. Thyroid hormone can be used as a bona fide antidepressant. When natural or synthetic forms of the hormone are administered in the right dose along with certain antidepressants, almost miraculous mood-boosting effects may result. This can be especially true for people who are suffering from depression and have not fully responded to the conventional antidepressants, such as Prozac[®] and other selective serotonin reuptake inhibitors.

Part II presents in-depth information on how thyroid imbalances may affect your weight, your sex life, and relationships.

Because thyroid imbalances can intrude in your personal life and affect both your sex life and relationships with devastating effects, it is important for you to learn how to discuss these intimate effects with your doctor. Such effects do not necessarily end after the imbalance has been treated, so you will also learn how to cope with these problems and how to ask your partner for the support you need.

Part III is devoted to women's health issues, especially infertility and miscarriage, postpartum depression, and premenstrual syndrome and menopause. A thyroid imbalance will cause or intensify premenstrual syndrome during the reproductive years and will affect the way a woman feels at menopause. Forty million women will enter menopause in the next two decades, and a significant number of them will become afflicted with a thyroid imbalance. Nearly 10 to 12 percent of postmenopausal women will experience hypo-

thyroidism. Because the symptoms of menopause and those of thyroid imbalances share many similarities, it is important for women to know when to suspect a thyroid condition and when to consider estrogen therapy.

Even minute thyroid imbalances can result in infertility, and the depression engendered by this infertility is often worsened by a thyroid imbalance. Women may also lose the desire for sex. I'll explain the interplay between the effects of infertility and thyroid imbalance on the mind and how you can break the costly, vicious cycles generated by thyroid disease.

Part IV is the most directly practical section of *The Thyroid Solution*. It provides tools for you to determine how healthy your thyroid is and what to do if you do suffer from a thyroid imbalance. It also describes the most popular lab tests for measuring how much thyroid hormone you have in your system as well as the pros and cons of simpler self-diagnosis techniques. Here we also examine a major controversy in the field: can you have a thyroid imbalance even though your blood tests seem normal? You'll find an extensive summary of other medical conditions that may increase your risk of suffering from a thyroid imbalance in the future. These are the same conditions that you will need to watch for if you have already been diagnosed with a thyroid disorder and treated for it. And you will learn some of the most common problems that can arise during the course of treating both hypothyroidism and hyperthyroidism, from side effects associated with the use of conventional thyroid drugs to the many problems that may occur if you're being treated with radioactive iodine.

You will learn how to work with your doctor to obtain the most appropriate treatment for your condition. You will also learn how to prevent the memory lapses and other cognitive problems, as well as depression, that may persist after thyroid imbalances have been treated. These lingering effects of thyroid imbalances often haunt millions of people even after their blood tests have returned to normal with treatment, and you may need to be persistent in seeking a cure for them. Many of my patients have benefited from following the "Circle of Wellness" model I provide for recovering from the long-term effects of a thyroid imbalance.

Whether you suffer from hypothyroidism, thyroid-related depression, fibromyalgia, or lingering effects, if you have been searching for a way to alleviate your symptoms and regain overall health, an innovative treatment protocol that I have developed by combining two major thyroid hormones may well revolutionize the way you treat your thyroid. *The Thyroid Solution* is the first book for laypeople to discuss this treatment and to show its benefits.

Finally, I present a comprehensive plan for maintaining your thyroid's overall health. The many lifestyle choices you make every day can prevent or alleviate thyroid imbalances. We look at the optimal diet for thyroid health—

a diet that, not coincidentally, also supports the health of other glands and organs. You'll also learn the most thyroid-friendly nutrients and the benefits of antioxidants and essential fatty acids in achieving and maintaining optimal physical and mental health. We pay special attention to the thyroid-specific mineral iodine and medications that can affect your thyroid. Further discussions focus on the benefits of exercise or regular physical activity, and why alcohol and nicotine are especially damaging to the thyroid.

The concluding chapter offers eight ways to educate doctors and laypeople about the crucial links between thyroid, mind, and mood to benefit our country's overall public health. Patients need to begin asking for routine testing of their thyroids, and the inception of public screenings, like those that are becoming commonplace for cholesterol levels, would immensely benefit individuals and our population as a whole.

A Mind-Body Approach to the Thyroid

Ultimately, this book lets readers know what I try to emphasize to my patients: thyroid disease isn't a purely physiological disease—it is a biopsychiatric one, a mind-body ailment. Many thyroid imbalances can be controlled just as other mental disorders are now, by correcting brain chemistry (in this case, either too much or too little thyroid hormone) and restoring patients' wellness and peace of mind. Further, thyroid hormone can help depressed and anxious patients stabilize their brain chemistry when conventional antidepressants have failed.

If I had my way, everyone who had not been feeling at his or her best for some time would be routinely screened for thyroid imbalance. Those patients diagnosed with a thyroid imbalance who, after a reasonable period of treatment with thyroid hormones, didn't feel like their old selves again would be put on the mind-body program detailed in this book.

The key to correcting thyroid imbalances has changed from simply diagnosing and chronicling physical symptoms to concentrating on the emotional aspects of the disease. Thyroid dysfunction can inflict brutal blows to the brain and create changes that have long-term—sometimes permanent—ill effects on your health and peace of mind. When I treat the long-term emotional and mental effects of thyroid disorder, I use both medication and personal therapy—the best of laboratory-based and listening-based patient care. My intention with *The Thyroid Solution* is to bring groundbreaking information and hope to all those thyroid patients who still suffer from mental anguish that has not been sufficiently explained or understood by physicians.

THE EMERGING MIND-THYROID CONNECTION

How a Tiny Endocrine Gland Intimately Affects
Your Mood, Emotions, and Behavior

1

THYROID IMBALANCE

A Hidden Epidemic

Could you have an overactive or underactive thyroid and not even know it? Millions of Americans—and a high percentage of women in menopause and perimenopause (the decade or so before menopause during which hormonal, emotional, and physical changes begin)—do. A thyroid imbalance is not always easy to recognize. Physicians continue to argue whether a minimal thyroid imbalance affects mental and physical health. But the truth is that it does—and big time.

Do you have any of the following symptoms?

- Always fatigued or exhausted
- Irritable and impatient
- Feeling too hot or too cold
- Depressed, anxious, or panicky
- Bothered by changes in your skin or hair
- At the mercy of your moods
- Inexplicably gaining or losing weight
- Losing your enthusiasm for life
- Sleeping poorly or insomniac

Are you feeling burned out from having acted on an excess of energy for several months? Are you listless, forgetful, and feeling disconnected from your friends and family? Are people telling you that you've changed? Are you taking Prozac or a similar drug for mild depression but still feeling that your mind and mood are subpar? Or have you been treated for a major depression in the past five years?

If you suffer from more than one of these symptoms or answered yes to

one or more of these questions, you could be one of the many people with an undiagnosed thyroid condition. Although some of these symptoms may seem contradictory, all of them can be indications of a thyroid imbalance.

You could also be one of the many people who has been treated for a thyroid imbalance but still suffers from its often-overlooked, lingering effects—effects that may continue to haunt you even after treatments have presumably restored your thyroid levels to normal. If you've ever been treated for a thyroid imbalance, answer these questions:

- Do you still suffer from fatigue?
- Do you feel better but still not quite your old self?
- Do you have unusual flare-ups of anger?
- Are you less socially outgoing than you used to be?
- Are you less tolerant of the foibles of family and friends?
- Do you suffer from occasional bouts of mild depression?
- Do you have frequent lapses in memory?
- Are you often unable to concentrate on what you're doing?
- Do you feel older than your real age?

If you've had a thyroid problem in the past but still answer yes to one or more of these questions, it is quite likely that your symptoms are thyroid-related. You don't have to suffer any longer. *The Thyroid Solution* will show you how you can work with your physician to heal these lingering symptoms.

The Thyroid and the Mind

At any given time in the United States, more than 30 million people suffer from a thyroid disorder, more than 10 million women have low-grade thyroid imbalance, and nearly 10 million people with thyroid imbalance remain undiagnosed. Some 500,000 new cases of thyroid imbalance occur each year.¹ All of these people are vulnerable to mental and emotional effects for a long time even after being diagnosed. Incorrect or inadequate treatment leads to unnecessary suffering for millions of these people. But these are numbers. Behind the numbers are the symptoms and ravaging mental effects experienced by real human beings.

For the past two decades, we have witnessed a major increase in the recognition and detection of thyroid diseases. This stems in part from improved medical technology, which has led to the development of sensitive methods of screening and diagnosing thyroid disorders. It also stems from the increased public awareness that thyroid disease may remain undiagnosed for a long time and that even mild thyroid dysfunction may affect your

health.² It is also likely that thyroid imbalance has become more common as a result of deleterious effects related to our environment. Recently, some medical associations such as the American Association of Clinical Endocrinologists have initiated public screenings for thyroid disease, much as cholesterol testing has become available in shopping malls and other public places. At any given time, more than half of patients with low-grade hypothyroidism remain undiagnosed. In a thyroid-screening program involving nearly two thousand people that I directed in the Houston area,³ 8 percent of those tested had an underactive thyroid. Many people screened had never heard of the thyroid gland but rushed to be tested when they recognized that they were suffering many of the symptoms listed in the announcement of the screening. In a statewide health fair in Colorado conducted in 1995, 9.5 percent of the 25,862 participants who were screened for thyroid imbalance were found to have an underactive thyroid and 2.2 percent had thyroid hormone excess.⁴ The public's awareness of thyroid disease was boosted by press reports about former president George Bush and his wife, Barbara, Russian president Boris Yeltsin, and Olympic track champion Gail Devers when they were diagnosed with thyroid disease. Thanks to these factors, people with unexplained symptoms are becoming increasingly likely to ask their physicians whether these symptoms might be related to an undiagnosed thyroid disorder.

As an endocrinologist who has focused his research, teaching, and patient care on thyroid conditions, I realized early on in my practice that taking care of thyroid patients was not as easy as I had expected. Treating and correcting a thyroid condition with medication may not always make the patient feel entirely better. I discovered that to care fully for my patients, to help them heal completely, I had to treat their feelings as well as their bodies. If they didn't feel better even though their lab tests said they were cured, I learned to listen to them, believe them, and work with them to help them become wholly cured. In taking care of thyroid patients, the physician's role is not merely to address physical discomfort, test the thyroid, and make sure blood test results are normal (indicating normal amounts of the various thyroid hormones in the bloodstream). Addressing the effects of thyroid disorders on the mind, helping patients cope with their condition, and counseling them sympathetically are equally important.

Many physicians treat dysfunctioning thyroids, but few of them listen to the person attached to the gland. They concentrate on the blood tests, and once your lab results become normal, for these physicians your case is closed. Yet you may go on to suffer for years from a variety of physical and mental symptoms left over from the thyroid imbalance. Research has shown that patients with thyroid imbalance continue to have symptoms even after their

thyroid hormone blood levels have become normal with treatment.⁵ Physicians should be treating the still-suffering patients in a more comprehensive way for as long as it takes for the mental effects to subside. The reality today, however, is that millions of patients suffer needlessly while their doctors continue to treat thyroid dysfunction as a simple physical disorder rather than what it is: a complex blow to the body and brain.

In general, primary care physicians have not been adequately trained to detect and manage thyroid disease and may lack the expertise needed to diagnose and treat a wide range of thyroid disorders.⁶ They also receive little teaching on the effects of thyroid disease on mental health or on understanding the interplay between the mind and the thyroid.

The majority of practitioners of internal medicine and family medicine complete their residency without having had some form of training in endocrinology (the field of hormones). When they leave their training programs, they have inadequate knowledge of thyroid disorders and inadequate experience in diagnosing and treating these disorders. As a consequence, they seldom look for subtle indications of thyroid disease.

Often a primary care physician ignores the thyroid gland in a routine examination and fails to examine the gland by touch. Yet the simple touch examination, or palpation, of the thyroid gland is quite important in finding clues to the presence of thyroid disease. Often physicians are not taught how to palpate the thyroid gland during their training. Many physicians would admit that they were never taught the right way to examine the thyroid gland and do not do the exam routinely in their practice.

Because both the physical and mental symptoms of thyroid disease masquerade as signs of many other illnesses, getting the proper diagnosis can sometimes take a long time. Often symptoms are misdiagnosed and mistreated. Until patients find the right doctor, they are left alone to deal with devastating effects, which may include depression or even upsetting changes in personal behavior. Thyroid imbalance can quickly escalate into a destructive brain chemistry disorder—as powerful and pervasive as major depression, an anxiety disorder, or manic-depression.

Once the brain has been denied thyroid hormone or oversupplied with it because of thyroid disease, it takes a long time to recover. If the symptoms are ignored, they can intensify. A vicious cycle occurs wherein the patient gets depressed, the thyroid disease worsens, physical and emotional effects multiply, and mental health suffers further. This cycle is not widely understood or recognized, and many physicians do not know how important it is to halt the cycle—or, indeed, *how* to halt it.

To understand how we got to this sad state of affairs, it is instructive to take a look at how perceptions of the thyroid and knowledge of its function have evolved over the past century.

Changing Views of the Thyroid

The Swiss artist Arnold Böcklin (1827–1901) painted a portrait of a woman who appeared quite depressed. Her unsmiling face was sad and lifeless, and her eyes had a detached look. The most striking thing about her appearance, however, was that the front of her neck was swollen. The swelling was so evident that Böcklin drew attention to it with his use of color and lighting. As a layman, he recognized that she had a physical illness and that she was depressed, but it is doubtful that he made a connection between her thyroid and her depressive state. In fact, we did not begin to understand this connection until the late nineteenth century.

Even before the thyroid gland was shown to play a role in regulating metabolism, it was recognized as “the gland of the emotions.” In fact, the relationship between the thyroid gland and the mind was thought for years to have merely an anatomical basis: the thyroid is physically close to the brain. The thyroid was believed to protect the brain from overheating, which could result from increased blood flow to the brain when a person was upset. Dr. Robert Graves was the first to provide the classic description of what is now known as Graves’ disease. In his description of this “newly observed affection of the thyroid gland in females,”⁷ he highlighted symptoms of the nervous system and used the term *globus hystericus* because of the many psychiatric manifestations exhibited by his patients. Dr. Caleb Parry, who had recognized the condition before Graves but expired before his observations were published, wrote: “In more than one of these [patients], the affliction of the head has amounted almost to madness.”⁸

For decades, in fact, Graves’ disease was considered to be a mental illness rather than a true thyroid disorder. The early label “crystallized fright” illustrates that this condition was seen as some kind of mental illness that follows a psychological trauma. Among the first physicians to focus on the physical symptoms of the condition was Baron Carl Adolph von Basedow. In 1840, he described four patients with protruding eyes, goiter, and rapid heartbeat. He was also the first to describe pretibial myxedema, a brownish swelling over the legs that occurs in a small number of patients with Graves’ disease. Whereas the term *Graves’ disease* has prevailed in the English-speaking world, *von Basedow’s disease* is the term used in Germany and some other European and African countries.

Nearly half a century after Graves’ observations, the British physician Dr. William Gull⁹ described for the first time the physical and mental consequences of an underactive thyroid. His writings suggested that some of the effects of hypothyroidism were significant mental changes leading to a severe slowing of the mind. Since then it has become clear that the main function of the thyroid gland is to produce thyroid hormone, which regulates the

functioning of our body and at the same time is a bona fide brain chemical that regulates mood, emotions, and many other brain functions. Doctors now have come to understand that the basis of the mind-thyroid connection, which was, for a long time, a mystery, is at least in part related to too little or too much thyroid hormone circulating in the body. A patient with a thyroid imbalance may experience physical effects such as skin problems, irregular heartbeat, congestive heart failure, high blood pressure, muscle dysfunction, and gastrointestinal disturbances. Thyroid hormones regulate the metabolic rate, a concept so well popularized that most people associate thyroid imbalance with metabolism and weight problems. And yet, for many people, the emotional and mood-related consequences of a thyroid imbalance are more drastic than the physical ones.

Paradoxically, whereas nineteenth-century physicians first described and demonstrated the significance of such mental symptoms, many modern-day physicians who treat thyroid patients tend to view thyroid disease only as a glandular disorder with *physical* symptoms.

Why Thyroid Imbalances Are Frequently Unsuspected

Let's take a look at the main reasons why doctors do not diagnose or misdiagnose thyroid imbalances.

Stress, depression, anxiety, tiredness, and other emotional or mental states can mask a thyroid imbalance. Your doctor may perceive symptoms caused by a thyroid imbalance as trivial, primarily because many of us complain of varying degrees of tiredness,¹⁰ lack of interest in life, and weight problems. Quite often, thyroid imbalance makes you suffer from symptoms of depression, but the symptoms and what is causing the symptoms are not addressed by your physician. Depression is the most common condition seen in general medical practice and the most common mental effect of thyroid imbalance. Researchers estimate that, at any given time, 10 percent of the population suffers from depression; over a lifetime, the prevalence may be as high as 17 percent.¹¹ Most patients with mental health problems seek help from primary care physicians rather than psychiatrists.¹² Quite often these physicians have received no training or inadequate training in assessing, detecting, and managing subtle mental disorders. Doctors in health maintenance organizations accurately diagnose fewer than 50 percent of those patients with unequivocal depression.¹³ Even among those who are correctly diagnosed with depression, only a small portion receives adequate treatment for a sufficient time.¹⁴ The financial pressures placed on doctors and the bureaucracies of the current health care system have made doctors unable to spend additional time talking to patients who may be depressed. They do not have

the time or they do not get reimbursed for that time. Getting into the emotional aspects of somebody's life can be a drain on physicians' energy, so many will actually avoid trying to understand the root of a patient's anxiety or depression. Internists and family practitioners may feel uncomfortable dealing with mental anguish and may stick to the familiar territory of performing a physical examination, performing laboratory tests, and prescribing medications.

When obvious stress is present, such as a difficult divorce, a stressful job, or other personal problems, your doctor is unlikely to consider a thyroid dysfunction as a possible cause of or a contributing reason for your symptoms. He may tell you, "You're doing too much, it's all stress!" if you complain about tiredness, feeling down, anxiety, and weight gain. Your close relatives and your doctor become convinced that the overwhelming stress and life situations are responsible for the symptoms. Yet, as we'll see in Chapter 2, stress itself can trigger a thyroid imbalance and contribute to depression. Stress generated by the effects of thyroid hormone imbalance can lead to an escalating cycle of stress-illness-stress. Stressful life events may then be blamed for what are really thyroid-related symptoms, allowing these symptoms to linger and intensify. I recommend that everyone who has experienced a major stress, such as a difficult divorce or the death of a loved one, and has ongoing symptoms have his or her thyroid tested.

You might have read or heard about symptoms of thyroid imbalance and come to the conclusion that your symptoms are likely to be due to a thyroid condition. If you ask your doctor to test your thyroid, he may resist the idea. Molly, who had gained a lot of weight and was exhausted from her hypothyroidism, told me:

Before I was originally diagnosed as being hypothyroid, I had read about it in a magazine. I kept telling my family physician that I had a lot of these symptoms. He never checked my thyroid. He told me, "You just want thyroid hormone because you think it will make you lose weight." That wasn't what I was looking for at all. I was just looking for an answer to why all these things were happening to my body. He finally agreed to do tests, and sure enough, I was hypothyroid.

You need to be persistent and have your doctor obtain the tests needed to uncover the root of your symptoms.

Doctors are even more likely to miss a thyroid problem and misdiagnose you if you have previously suffered from depression, panic attacks, or any other mood disorder. Symptoms of a thyroid imbalance are then likely to be attributed to the mood disorder, and the physician searches no further. One

patient told me, “I learned quickly after I had been in the psychiatric hospital the first time what not to tell doctors, because once they hear that you had a mental condition, they disregard everything else you say.”

Patients with thyroid imbalance may see a psychiatrist rather than a medical practitioner for depression and anxiety. Because depression and anxiety disorders can cause the same physical symptoms as thyroid imbalance, psychiatrists are likely to come up with a psychiatric diagnosis when they see a thyroid patient. One study showed that when psychiatrists use conventional psychiatric criteria to assess hyperthyroid patients, they diagnose nearly half of the patients as depressed or suffering from an anxiety disorder.¹⁵ Unfortunately, some psychiatrists do not always look for a thyroid condition as a possible reason for their patients’ fatigue, lack of interest in life, and inability to function as before.

The apparently close link between depression and thyroid imbalance has wide-ranging consequences. For a person like Rachel, a young wife and real estate agent I treated recently, uncovering that link was crucial for overall health and happiness. Before her true, thyroid-related condition was identified and treated, Rachel showed many of the signs of clinical depression. “I was always tired,” she related.

I couldn’t exercise anymore, and that was very frustrating. I would come home and fall asleep. If I wasn’t sleeping, I was doing nothing more than watching TV. I didn’t cook. I didn’t clean. I didn’t even let the dog out. I also put on twenty pounds in one month and lost a lot of hair, which was terrible for my looks and my self-esteem. I just had no willpower. I had to take a broker’s license test, which cost my firm \$2,000, but I couldn’t even get motivated to study for it. I just wanted to go home and put on my nightgown and sit there on the couch. I lost interest in having any social life with my husband. I didn’t want to see anyone. We quit going out. Our sexual relationship went to zero, too.

Given Rachel’s symptoms, it is not surprising that for a long time she was diagnosed as depressed. Yet many of these same symptoms are associated with an underactive thyroid, and when Rachel was treated for her thyroid imbalance, she began to improve. “I gradually woke up and began to feel good,” she said. “I didn’t feel groggy or rushed anymore. I started eating right. I was more active and doing moderate exercise, and I lost thirty pounds. My husband and I went dancing, and I reunited with my friends again. They all asked, ‘Where were you?’ ” For Rachel to fully answer that question, she would need to understand more about the interplay of thyroid, mind, and mood. Clearly, an underactive thyroid frequently causes depression, and an overactive thyroid tends to result in an anxiety disorder. Never-

theless, anxiety is also common in hypothyroid patients, and some patients with an overactive thyroid suffer from depression.¹⁶

Patients aren't totally aware of the full range of their symptoms or don't communicate them to their doctors. You may unintentionally hinder a proper diagnosis by failing to volunteer all of your complaints to your doctor. The statement "I'm tired and exhausted" usually reflects only surface symptoms. The symptom of fatigue may hide a multitude of feelings and emotional problems that patients may be reluctant to reveal. Most people have difficulty analyzing and clearly expressing how they feel or how their mind has been affected. Often we are not taught to recognize how our hearts feel, and many of us are taught to ignore or discount our emotions. We frequently lump all discomfort and mental suffering into "I'm tired, I'm exhausted, and I can't function the way I used to." Also, we tend to dismiss any mental or physical dysfunction as temporary.

Many people experiencing fatigue, lack of interest in life, and an inability to function as they once did suffer for years. They adjust to these feelings and are able to work and take care of responsibilities at home. But inside they are hurting. They have to struggle to appear normal to those around them. They live in a state of denial or self-dismissal and may not seek help or treatment for their symptoms.

Some of this self-dismissal stems from the stigma our culture puts on any and all mental conditions. The prevailing view that mental suffering is less serious than physical suffering may cause some people with a thyroid imbalance to hide their anxiety, depression, or pain and not seek medical help. Others may fear ridicule from friends and relatives if they do seek treatment.

One patient who was suffering from lingering depression due to hypothyroidism told me, "I knew I was depressed and something was inadequate within me. I didn't want my family to know. I didn't want my company to know. I didn't have health insurance coverage for depression treatment, so I couldn't afford proper help." Many patients are afraid to seek psychiatric care because they may later encounter significant difficulties in obtaining certain types of insurance.

A second-year law student whom I evaluated for a possible thyroid disorder had suffered from a severe anxiety disorder for two years. He had correctly diagnosed his anxiety disorder a year earlier but had not reached out for help. "I could not go see a psychiatrist because later on, when I sit for my bar exams, just having a record saying I saw a psychiatrist will affect my entire career." This patient turned out to have an overactive thyroid due to Graves' disease.

I cannot emphasize enough how important it is for you to seek help as

soon as possible after the onset of your symptoms rather than accepting them and doing nothing about them.

The wide range of physical symptoms can mask a thyroid imbalance. If your symptoms are predominantly physical, your doctor may focus on the organ or organs involved instead of searching for a general body imbalance and an underlying condition. He or she may end up treating you for specific symptoms and fail to diagnose the thyroid condition that is causing the symptoms. For instance, rapid heartbeat is a common symptom of an overactive thyroid that often leads physicians to consider heart disease. But if the heart evaluation is normal, doctors often dismiss the patient as anxious.

Judy, a forty-one-year-old divorced woman whose mother had died three years previously, was experiencing many symptoms of anxiety and depression. Even more disturbing to her were frequent palpitations and weakness in her arms and legs. Overactive thyroid can cause muscle weakness, which should not be confused with the intermittent general weakness accompanying acute anxiety. In Judy's words:

I had been experiencing rapid heartbeats for about three years. I was nervous and impatient. I had shaky hands. My doctor told me it might be nerves. He put me on the anxiety-reducing drug Xanax. One time I got up at night to go to the bathroom, and when I started walking, I felt like I was going to fall over. I felt like I was losing control. I was nauseous and my heart was beating fast. I called a friend and asked him to come and get me. When I went in the first time, the doctor in the emergency room said I was under tension.

I kept having the same symptoms. I went to the hospital several times, and the doctors gave me a beta-blocker to slow my heart down, but it wasn't enough. I kept waking up at night with palpitations.

The doctors ended up scheduling a twenty-four-hour heartbeat-monitoring test.

It took a long time for Judy to be diagnosed with Graves' disease. The physicians who saw her on numerous occasions were focusing on her heart. After her overactive thyroid was treated, all her symptoms, including the rapid heartbeat, resolved.

Thyroid hormone imbalance affects the functioning of most bodily organs. How severely it affects organs, however, differs from one person to the next. Imagine two people having the same level of hypothyroidism. They may have some symptoms in common, such as dry skin, constipation, and weight gain. One of them, however, may have severe headaches, which then become the main concern for both the patient and the physician. Joint and muscle pain is another symptom that often triggers unnecessary

testing and leads to the wrong diagnosis. Doctors frequently consider neurological or rheumatological conditions in such patients rather than a thyroid disorder.

Patients who undergo repetitive testing for rheumatological or neurological conditions and are referred to different specialists often become frustrated because the testing fails to produce a firm diagnosis. In the meantime, the patients' symptoms of depression and their feelings of being out of control may increase. Undiagnosed thyroid patients typically go from physician to physician, searching for the reason for their symptoms.

Gynecological and hormonal symptoms can mask a thyroid imbalance.

Women with a thyroid imbalance frequently seek help from their gynecologists because their symptoms, both physical and mental, have evolved concurrently with the onset of heavy or irregular menstrual periods or loss of menstrual periods. Their symptoms, including the menstrual problems, are often attributed to gynecological or hormonal changes. They are often told that they are becoming menopausal or are perimenopausal.

Janet had been suffering from hypothyroidism for more than two years, but her gynecologist focused on Janet's heavy bleeding. Janet ended up having a hysterectomy after having unsuccessfully tried various hormonal treatments. According to Janet:

The gynecologist gave me hormone samples to try for three months. I was still having heavy periods, and nothing felt better, so I went back. I got another type for three months. Four times I went and tried different hormones. Then I had a hysterectomy. I kept gaining weight. My hair was falling out. I felt out of control. I said, something is not right here. Finally, after the hysterectomy, a doctor diagnosed me with hypothyroidism.

Angela, a thirty-five-year-old sales manager in a department store, told of how she suffered from numerous symptoms for which she could find no explanation for a long time:

After I had my second child, I stayed home for the first year of his life, and then I went back to work. There were times that I had a feeling of ill-being, sinking. If I didn't lie down and go to sleep, I felt like I was going to fall down and sleep where I was. I developed more symptoms, such as the migraines. My internist put me on Valium, which I stopped because it made me feel drowsy, but I then began to take Xanax twice a day and another drug for anxiety.

Angela was also suffering from impaired short-term memory, moodiness, anger, and frustration, partly due to thyroid hormone imbalance and partly as a result of anxiety from not knowing what was happening to

her. When her menstrual periods became heavier and started lasting seven to eight days, she became concerned that all her symptoms were gynecological.

She says, "My mother told me, 'Your symptoms sound like you have early menopause. Go and see your gynecologist!' I complained to my gynecologist about my periods getting longer. She suggested using hormones to correct the problems, but my symptoms grew worse."

Angela's experience shows how the mental suffering due to hypothyroidism may be incorrectly attributed to reproductive hormonal problems. When estrogen or progesterone treatments do not help alleviate your symptoms, it is very important to get tested for a thyroid imbalance.

Thyroid symptoms are often dismissed as unimportant "female complaints." In recent years, the question has arisen as to whether internists and family practitioners are adequately trained to provide care for women and to understand their health needs fully. Women's health considerations differ from men's because of differences both in reproduction and in hormonal, psychosocial, and socioeconomic factors.

A study published in the *Journal of Women's Health* in 1993 suggests that the detection of thyroid abnormalities among fifteen- to sixty-four-year-old women often depends on the competence of family and general practitioners and gynecologists. The study showed that women in general receive the majority of their health care from family and general practitioners (54.9 percent), while internists accounted for only 21.5 percent and gynecologists for 23.6 percent of visits.¹⁷ However, women's general physical examinations were largely performed by gynecologists (57.3 percent).

An American College of Physicians task force has defined the minimum competencies for physicians who take care of women and has recommended enhancing the competencies pertaining to women in the field of internal medicine. Competency in the field of thyroid disease is not emphasized enough, despite the fact that thyroid disorders predominantly affect women. Women are more likely than men to be misdiagnosed, perhaps because many doctors often attribute women's complaints to anxiety. Because of time constraints, some doctors may dismiss women who express "too many symptoms" when they detail their history. They may misperceive the emotional effects of a thyroid imbalance as "typical female complaints." Or they believe the symptoms are hypochondriacal. Such prejudices can result in failure to diagnose a thyroid imbalance.

Leslie Laurence and Beth Weinhouse, in *Outrageous Practices: The Alarming Truth about How Medicine Mistreats Women*, recount the story of a woman with an overactive thyroid caused by Graves' disease. It was twenty years before a physician finally made the correct diagnosis.¹⁸ Accord-

ing to the patient, “They didn’t look thoroughly enough because I’m a woman.”

Although prejudices against women in health care are not unique to thyroid disorders, the consequences of dismissing the symptoms of thyroid imbalance in women are probably more severe than is the case with any other common condition that doctors deal with. The complex interplay between premenstrual hormonal changes, menopause, the postpartum period, reproduction, and thyroid imbalance has not been significantly addressed in women’s health care. We need to raise our awareness of the deficiencies in providing optimal care for women afflicted with thyroid disease.

Your Doctor May Not Get the Right Test or May Overlook Abnormal or Borderline Results

The search for a correct diagnosis is lengthy in many patients. To determine whether you have a thyroid imbalance, you must be tested for the level of TSH (thyroid-stimulating hormone), the pituitary hormone that regulates the functioning of the thyroid gland. The TSH test is much more reliable for detecting an underactive thyroid than the measurement of thyroid hormone levels in the blood. If your doctor relies only on the T4 and T3 measurements and fails to order the appropriate test (TSH), you may not be properly diagnosed for hypothyroidism. Jane, a twenty-eight-year-old nurse enrolled in an HMO, told her primary care physician about her classic symptoms of a thyroid imbalance: decreased sexual desire, hair falling out, troubles with vision, dry skin, and lack of concentration. On her insistence, he ordered a T4 test (which measures the level of T4, one of the two thyroid hormones produced by the thyroid gland). Her results came back within the normal laboratory range, whereupon he declared that Jane could not have thyroid disease. However, he had not checked her TSH.

She says, “Being told that nothing was wrong with me made me think I might be crazy. I have a history of people trying to deny me my feelings, trying to tell me that what is going on in my body is not real.” When her TSH level was later measured by an endocrinologist, she was diagnosed as hypothyroid.

Even if your TSH level has been checked, your doctor may interpret slightly abnormal or borderline results as trivial and not significant. You may be denied treatment even though low-grade thyroid imbalance could be promoting many of your symptoms. I will address in Chapter 15 the significance of borderline and marginally abnormal thyroid tests, as well as the controversy on what should be considered a true normal range for TSH. If you

have symptoms of thyroid imbalance and your test result is in the gray zone of normalcy, you need to be persistent in pursuing the possibility that your symptoms could be thyroid related—more so if other family members have been diagnosed with a thyroid condition or other immune-related disorders.

As you can imagine, having your doctor dismiss your symptoms as unimportant, transient, or irrelevant would generate a great deal of anxiety. Not only would you question your own experience and judgment, but you would still be suffering from the very real problems that caused you to go to your doctor in the first place! You may feel that you are perceived as a hypochondriac or even come to think you are imagining things. Yet at some level, you do know that your body is not acting the way it should. When thyroid patients ultimately obtain a proper diagnosis that confirms that there is something medically wrong with them, they are almost universally relieved that their symptoms were not just “in their mind” and that they were not “going crazy.”

The Immune System—Thyroid Connection: The Root of the Epidemics

Thyroid imbalance can be caused by a wide range of thyroid conditions, but the most common ones are disorders of the immune system:

1. Hashimoto's thyroiditis, the most prevalent disorder resulting in thyroid hormone deficiency
2. Graves' disease, the most common condition causing an excess of thyroid hormone production

Both of these thyroid ailments are recognized as autoimmune conditions because they reflect a pattern in which the body attacks itself. At all times, your immune system is working at recognizing what is “self” and what is “not self.” Ideally, the immune system attacks and destroys only foreign organisms and structures (“not self”) and does not produce any adverse reaction to your own organs and tissues. Hashimoto's thyroiditis or Graves' disease occurs when the immune system loses its ability to differentiate between “self” and “not self” and begins to produce antibodies and other chemical substances that attack the thyroid gland. Hashimoto's thyroiditis causes gradual destruction of the thyroid gland and leads to an underactive or even moribund gland. The condition's fraternal twin, Graves' disease, results from an immune system that produces antibodies that stimulate the gland and make it overproduce thyroid hormone. Extensive study of large populations as

well as family and twin research has proven that our genes play a role in the occurrence of autoimmune thyroid conditions. Although Hashimoto's thyroiditis and Graves' disease cause opposite reactions in the gland, people affected by one or the other have some common genetic vulnerability. One of three families in which two or more patients suffer from autoimmune thyroid conditions have cases of both Graves' disease and Hashimoto's thyroiditis.¹⁹ Some of the susceptibility genes are unique to Graves' disease, some of the genes are unique to Hashimoto's thyroiditis, and some of them are present in both conditions.²⁰ This explains why members of the same family may have either Graves' disease or Hashimoto's thyroiditis. The genetic predisposition to autoimmune thyroid disease is an important factor—but not the only one—in determining who is vulnerable to a thyroid imbalance. In fact, the genetic importance is small compared to other factors. The California Twin Study has recently shown that if one of two identical twins has Graves' disease, the other twin has only a 17 percent chance of having Graves' disease.²¹ The other twin is also predisposed to having Hashimoto's thyroiditis or other autoimmune conditions, but the risk is less than 20 percent.

Genetic factors coupled with the effects of sex hormones provide a clue as to why autoimmune thyroid disease occurs seven to ten times more frequently in women than men. The fluctuation of hormones such as estrogen and progesterone plays a role in triggering these disorders. This is illustrated by the fact that before puberty, both sexes are equally apt to develop an autoimmune disease, whereas after puberty, women become much more vulnerable to such conditions. Having been pregnant makes a woman more vulnerable to Graves' disease than a woman who has never been pregnant. Researchers believe that this is related to estrogen and fluctuations of sex hormones. Some evidence indicates that estrogen aggravates autoimmune thyroiditis,²² while testosterone suppresses the immune attack. With aging, the vital balance that keeps the immune system harmless to your organs becomes precarious, and this also may make you susceptible to autoimmune thyroid disease as you grow older.

In recent years, there has been a noticeable increase in the frequency of autoimmune thyroid disorders. People are more stressed out these days, and it is likely that stress accounts for some of this increase. In the next chapter, I will explain how stress can act on the immune system to trigger and perpetuate thyroid imbalance.

In addition to stress, our environment and what we eat and don't eat are certainly contributing factors.²³ Infections are among the most significant environmental factors that have been linked to autoimmune thyroid disease. Among the infectious agents that have been implicated are Cocksackie

B virus, *Yersinia enterocolitica*, and *Escherichia coli*. Also, infections with *Helicobacter pylori* (the bacterium that results in gastritis and ulcer) have been found in a high percentage of people with autoimmune thyroid disease.²⁴ The likelihood that your immune system becomes disturbed and attacks your thyroid is also enhanced by smoking, alcohol consumption, and lack of exercise. The kind of food you eat can affect your immune system as well and make you more susceptible to autoimmune reactions on your thyroid. A deficiency in important nutrients—to mention a few, essential amino acids and certain vitamins and antioxidants, such as vitamin A, folic acid, vitamin B₆, vitamin C, vitamin E, vitamin D, zinc, copper, selenium, and omega-3 fatty acids—can make the immune system more prone to attack your thyroid gland.²⁵ A person who has a genetic vulnerability may easily become afflicted with an autoimmune thyroid disease if he or she consumes excessive amounts of iodine.²⁶ Iodine excess has become a significant environmental trigger of autoimmune thyroid disorders. Research has also shown that radiation exposure can trigger autoimmune thyroid disease.²⁷

It is clear that our knowledge of what might cause and trigger autoimmune thyroid conditions is expanding. Genetics, nutrition, and stress are the biggies. Environmental factors, pollution, and perhaps even silicone breast implants also play a role in the epidemics of autoimmune thyroid disorders and thyroid imbalance.

Important Points to Remember

- Thyroid imbalances have such a wide range of effects on body and mind that thyroid conditions can hide or masquerade as many physical and emotional disorders.
- At any given time, more than half the people suffering from a thyroid imbalance are either undiagnosed or misdiagnosed.
- Do not necessarily rely on your primary care physician to detect and treat your thyroid disorder. Many primary care physicians have been inadequately trained in this field or lack the expertise to deal with complex cases. Be persistent in asking for the right testing and follow-ups.
- If you are experiencing emotional problems, talk about them openly with your doctor. Discuss *all* of your symptoms. Much of the suffering generated by thyroid imbalances can be easily corrected.
- Remember, although thyroid imbalances can cause depression, anxiety, and mood swings, you may *not* need a psychiatrist.
- Hashimoto's thyroiditis and Graves' disease are the leading causes of

thyroid imbalance. Both conditions represent reactions of the immune system to the thyroid gland. Your genes account for some of the predisposition to having these conditions. The effect of stress and the environment, including vitamin D deficiency, deficiency in other vitamins and antioxidants, smoking, and infections, is far from negligible.

2

STRESS AND THYROID IMBALANCE

Which Comes First?

At the end of a lecture I gave to a third-year medical class, a student named John came to me and said that his twenty-three-year-old wife, Christy, had been experiencing “odd symptoms” for the previous year and that her primary care physician could find nothing wrong with her. “I’m wondering whether she has a thyroid condition, because she has many of the symptoms you described,” he said. In my first encounter with Christy, she told me what was happening to her. Her scenario was typical of what many thyroid patients go through.

Christy traced her symptoms to a period the year before when she and John had married and she had started law school. About that time, she began to gain weight and be extremely fatigued. At times, she felt her heart was beating fast; she was moody and would cry for no reason. Christy was having a hard time functioning and frequently felt “strange” in her body, which is often typical of panic attacks. She attributed her symptoms to the stress of being newly married and feeling torn between her husband and her studies. Her mother frequently blamed her for having brought her symptoms on herself, saying that Christy shouldn’t have started law school and gotten married at the same time.

Her primary care physician was initially concerned that Christy’s palpitations might indicate a heart problem, but her heart exams turned out normal. Once he learned more about Christy’s schedule, the doctor, like her mother, suggested that her symptoms were due to stress. When Christy finally consulted me, I determined through blood tests that she had an underactive thyroid.

Christy told me:

Before this time, I was a relaxed person. But suddenly anything would set me off. Even little annoyances or problems seemed like the end of the world and

had to be resolved right then. Even though I'm not a devoted cook, if John didn't finish the meal I served, I would fly off the handle. I overreacted to everything, and John wouldn't know from minute to minute what might set me off. This went on for an entire year.

Clearly the stress Christy was feeling was actually creating more stress. Her thyroid imbalance made her unable to deal with the minor stresses that had never affected her previously.

Christy had suffered unnecessarily for a year. Once her thyroid levels became well balanced with treatment, Christy became more able to deal equitably with the stress she faced.

"I don't get upset over silly things anymore. I'm feeling great, doing well in school now and at home without feeling stressed-out. John is happy, too. Recently he said, 'You're back; you're nice again.' "

Christy's story illustrates how dramatically thyroid hormone imbalance can affect a person's ability to deal with stressful events, even the small ones that would normally just be minor parts of daily life. Indeed, the relationship between stress and illness is more apparent in thyroid disorders than in any other medical condition. Thyroid imbalance is an ideal example of the interrelations between mind and body because it reveals how difficult it is to separate out whether the mind or the body is the origin of illness.

How your mind handles stress dictates whether you will recover quickly or fall into an emotionally and physically depleting stress-illness-stress cycle. Laid-back persons who handle difficult situations relatively easily are not likely to be swept up in such cycles. Those who find stressful situations difficult to bear might easily end up with a thyroid hormone imbalance once stress, and reaction to it, occurs. *But these people should not be blamed for their illness.* They did not, as Christy's mother had told her, bring this illness on themselves. Different people handle stress differently, and you cannot avoid stress. It is an inevitable part of life.

Think of stress as a long bar with many notches in it. At one end of the bar are small notches that represent minor stresses, such as an argument with a colleague, a child spilling soda on the sofa, or too much paperwork. In the middle of this bar are bigger notches representing life events such as the loss of a job, feelings of financial insecurity, or marital troubles. At the opposite end of the bar are large gashes—traumatic events, such as being a victim of violence or abuse or serving in combat. How your mind and body respond to a stressful event, however, may have more to do with how you *perceived* the event than with the precise nature of the event.

You feel, integrate, and react to stressful events through responses in your brain chemistry. The body responds to happy or upsetting events in an area of the brain called the limbic system, the same area that controls mood

and emotions. This is also the part of the brain where thyroid hormone is delivered in great amounts. Within the limbic system, thyroid hormone is a major chemical player.

Thyroid imbalance, whether from a deficiency or an excess of thyroid hormone, generates a myriad of emotional, mood, and cognitive effects and weakens the ability to cope with stress. Disturbed emotions inevitably generate new stress, related to anger, irritability, depression, and maladjusted behavior. Upsetting situations that grow out of this regenerated stress are perceived in an amplified way, leading to a feeling of being constantly stressed out.

Even a laid-back person can easily fall into the stress trap if his or her thyroid gland becomes dysfunctional, simply because thyroid hormone is one of the chemicals that regulates how we perceive and emotionally respond to stress. Symptoms of thyroid imbalance are often confused with symptoms due to stress. The similarity between stress reactions and symptoms of thyroid hormone imbalance causes a problem that is common among thyroid patients: their imbalance may go unrecognized for a long time before it is considered as a possible reason for their suffering. Both patients and physicians blame the symptoms of thyroid imbalance on stress rather than on a chemical imbalance that is affecting the patient's body and mind.

How Stress Can Trigger a Thyroid Imbalance

It is crucial to understand that a mental state or stress can trigger and worsen thyroid disease and that you can learn ways to help yourself get well. My thyroid patients often ask, "What caused or triggered this condition?" Even though stress is not the only possible catalyst, it is in many patients an obvious one.

Physicians Deepak Chopra, Andrew Weil, and Bernie Siegel have emphasized the importance of attitude and mind-related techniques (such as meditation and guided relaxation) to help avoid or overcome illness and have increased our understanding of the relationship between stress and illness. *Anatomy of an Illness*, Norman Cousins's account of his mind and spirit's triumph over illness, was among the first memoirs to bring to public awareness the incontrovertible connection between good spirits and good health.¹ Since its publication in the late 1970s, much research has supported this connection and further enhanced our understanding of how stress affects the mind and body. Under stress, the brain emits chemical messages that trigger major responses of the endocrine system. One such response, perhaps the most significant one, is the increase in production of the hormone corticotropin-releasing factor (CRF) by the hypothalamus. Normally, CRF enhances arousal

and attention and makes your body and mind adjust better to stress and respond appropriately to it. CRF, by acting through the pituitary gland, will also make the adrenals produce excessive amounts of the stress hormone cortisol. In addition, too much CRF will affect neurotransmitters in the brain that regulate mood.² By this mechanism, too much CRF in the brain will make you prone to becoming depressed and panicky when you experience too much stress. If you handle stress well, the response of the endocrine system is minimal and short-lived. But if you are stressed for a long time; experience major upheavals, setbacks, or traumas; or have difficulties coping with stress, your endocrine system becomes chronically challenged and causes health problems.³ How you react to stress depends somewhat on your personality makeup, on your genes, and also on whether you suffered from stressful events in early life. Infancy and childhood stress makes you more fragile when it comes to dealing with stress later in life and more vulnerable to depression, anxiety, panic attacks, and post-traumatic stress syndrome as a result of ongoing stress.⁴ One of the most significant consequences of the endocrine system's response to too much stress or difficulty coping with stress is a disturbance of the immune system.⁵ There are differences in the physiologic responses to stress between women and men. These differences make women more vulnerable to autoimmune disorders.

In studies conducted on the effect of arguing and hostility, psychologist Janice Kiecolt-Glaser showed that the more hostile people are during marital arguments, the more suppressed are their immune systems.⁶ High levels of stress—and, more important, an impaired ability to cope with stress—will disturb your immune system and make it react to your thyroid gland as if it were a foreign structure, particularly if you have a genetic vulnerability for such reactions. In essence, stress will make your immune system lose the ability to differentiate between “self” and “not self.” Stress will also weaken your immune system, which will make your body more vulnerable to infection.⁷ This causes viral and bacterial infections to stay with you longer. The immune system will attack the invading virus, but if the virus has a molecular structure that mimics the makeup of the thyroid gland, when the immune system produces antibodies to attack the virus, it will mistake the thyroid gland for the virus. The key player in the scenario is the immune system.

With that in mind, it is easy to understand that the difference between a person who successfully interprets and deals with stress and the rest of us is that the more relaxed among us are less likely to experience disturbances of the immune system and other ailments resulting from too much cortisol. The biochemical cascade that links the brain to the immune system is at the root of how mental stress triggers thyroid imbalance.

The Stress/Thyroid Escalation Cycle

A wide variety of stressful situations may serve as the trigger of an autoimmune attack on your thyroid. For example, when I saw my patient Ron for the first time, he had already been treated for hyperthyroidism due to Graves' disease. His symptoms lingered, however, and his hormone levels were still not in balance, so I asked him to describe the circumstances that led to his disorder. In his words:

I was in the military and living near the base with my wife. I was working two jobs trying to put her through school. One job was teaching, which kept me busy from six in the morning until three in the afternoon. I slept from four until seven, then I'd get up and go to the commissary, where I would stock shelves until about one A.M. We had borrowed money from my wife's family to put a down payment on a house and were being pressed to pay back the loan. The pressure was unbearable. My boss in the teaching job was verbally abusive and openly belittled me. It was a totally stressful situation.

Ron traced his early symptoms to this time in his life. "I couldn't tolerate the heat. I was sweaty all the time, and my heart pounded constantly. I had muscle contractions and chest pains. At night, I would be sleeping and then jump out of bed. I went to the doctor at the base. He kept saying it was stress related and I might want to see a psychologist."

As is often the case, Ron became short-tempered and found it hard to control himself around his children. He quit his second job, which made it more difficult to repay the loan. That situation, in turn, put even more pressure on him. His symptoms lingered. Each time he went back to the doctor, he was told his condition was stress related. Unable to cope any longer, he left the army.

The Escalation Cycle

In many patients like Ron, detailed histories obtained when they are finally diagnosed reveal that major stress events, sometimes quite remote, probably triggered their conditions. Doctors may blame this event for the patient's symptoms. This misdiagnosis or lack of diagnosis may lead to lingering symptoms and finally escalation and perpetuation of the stress. Often physicians are faced with a Gordian knot: they can only guess whether symptoms are primarily due to a thyroid imbalance. If the treatment does not get to the root of the problem or find a way to break the cycle, however, the symptoms will go on endlessly.

Much of the cycle of symptoms takes root in the period before the patient is diagnosed. A mild dysfunction triggered by a stressful event becomes a

more severe dysfunction with more stress. The additional stress results in illness, leading to more stress. The onset of one disease giving rise to another that subsequently affects the first is the pattern doctors face in diagnosing and treating thyroid imbalance. Yet this escalating cycle could easily be halted in its early stages if both physicians and patients became more aware of it. Interrupting this cycle by diagnosing the thyroid imbalance early and addressing the stress issues related to it prevents unnecessary physical and mental suffering, personal problems, and undue stress, enabling the patient to feel better faster.

Kimberly's struggle with a thyroid condition illustrates the perils for the patient entangled in the cycle. An attractive thirty-four-year-old woman, Kimberly was referred to me for Graves' disease by her gynecologist. Kimberly was certain that her symptoms had begun some two years earlier, approximately four months after she started a new job. Prior to that, she was happy and relaxed. She said:

-I thought the job would take me further in my career in management, but the pressure was too much. After trying to keep up, I began to realize it wasn't the right job for me. My self-esteem began to suffer.

I was stressed out and became anxious and depressed. I seemed to be sick all the time and exhausted, which I related to being ill for most of the winter. I became belligerent, uncooperative at work, and angry and overactive at home. My husband thought I was having a breakdown. He insisted I see a psychiatrist.

Kimberly slowly became entangled in a chain of events that affects many thyroid patients, sometimes for years, both before and after diagnosis. The psychiatrist treated her with antidepressants, which can cause patients with an overactive thyroid to feel worse. Kimberly noticed a puffiness around her eyes, and she lost weight. But because these symptoms were insignificant in relation to the problems that seemed to be pulling her world apart, she ignored them. The antidepressants did not help, so the psychiatrist put Kimberly on an anti-anxiety medicine. Meanwhile, her self-confidence was eroding daily at work, and the humiliation leaked into all areas of her life. Eventually she was fired.

At this point, Kimberly "went a little crazy," to use her expression. She interviewed for many jobs but came across as insecure and unfocused. No one would hire her. To fill the void, she tackled hundreds of extra tasks at home and performed them badly. Her husband had to take over the management of the children's activities. Arguing with her husband became part of Kimberly's daily life. The loss of her job and the reduced income became a source of marital tension. At some point, she began to suffer rapid heartbeats and consulted a cardiologist. He diagnosed her symptoms as stress related. Her psychiatrist noticed that Kimberly had developed tremors and suggested she see a

neurologist. Tests came back negative. Even so, Kimberly says, "I cried. I didn't care that there was nothing wrong. I just wanted someone to help me."

Kimberly's disease was spiraling. From the time the stress of the new job triggered her Graves' disease to the mood disorder that followed and the physicians' confusion about the root of her problem, Kimberly had run around the circle of thyroid disorder many times, with each symptom leading inevitably to the next. Depression followed stress, a disturbed immune system caused a worsening of the overactive thyroid, stress and the effects of hyperthyroidism led to exhaustion, and uncontrollable behaviors caused low self-esteem, which produced further stress. The cycle became self-reinforcing.

An astute gynecologist was the first physician to consider testing Kimberly's thyroid. By treating Kimberly's thyroid condition and addressing the stress issues, we were eventually able to interrupt this stress cycle. It wasn't quick and easy, however. The mental anguish had altered Kimberly emotionally, affecting her brain chemistry. Organically, she had gone through a change. It took weeks to normalize her thyroid hormone levels. Kimberly gradually regained her equilibrium through much support from home, good therapy, and an antidepressant medication. Sadly, her troubles could have been stopped at many points if both she and her doctors had not been confounded by the confusing mind-body symptoms of thyroid disease.

Until quite recently, researchers were unable to determine conclusively that stress is a major trigger of Graves' disease. This is ironic because, in the first cases of Graves' disease ever diagnosed, it was noticed that major stress had precipitated the cycle. The Irish physician Caleb Parry, the first to recognize the condition, described "Elizabeth S., aged 21," who "was thrown out of a wheelchair in coming fast down a hill . . . and was very much frightened. From this time she has been subject to palpitations of the heart and various nervous affections. About a fortnight after, she began to observe a swelling of the thyroid gland."⁸

It is often difficult for researchers and physicians to determine whether stress has been precipitated by thyroid imbalance or vice versa. There is just no way to pinpoint when the thyroid condition began in an individual unless blood levels of thyroid hormones were measured before the onset of stress.

Despite these difficulties, researchers have recently been able to establish a clear-cut link between stressful events and the onset of Graves' disease. One study, for instance, concluded that factors such as change in work conditions, change in time spent on work, and hospitalization of a family member for a serious illness (factors that could not have been caused by the thyroid condition) were all associated with the occurrence of Graves' disease.⁹ Another study conducted at the University of Tokyo on 228 patients with newly diagnosed Graves' disease concluded that stress increased the occurrence of Graves' disease by 7.7-fold in women.¹⁰ The study also showed

that smoking (perhaps an indication of stress) increased the risk for Graves' disease, too. Divorce, marital difficulties, death of loved ones, and financial troubles are also possible triggers of Graves' disease.

The difficulties facing researchers are even greater with Hashimoto's thyroiditis, which causes an underactive thyroid. Hashimoto's disease is much more common than Graves' disease, affecting more than 10 percent of women. Many people suffering from Hashimoto's thyroiditis have an enlarged thyroid or a goiter but no other symptoms. They often have high blood levels of antithyroid antibody, which is produced by the immune system. Doctors use this antibody as a marker for the disease. Many patients with Hashimoto's thyroiditis have a minimally underactive gland, causing tiredness, dry skin, and a feeling of being colder than usual. Because the symptoms of Hashimoto's thyroiditis are more insidious than those of Graves' disease, few researchers have seriously attempted to establish that stress could trigger this condition or the resulting imbalance.

Nevertheless, endocrinologists routinely see patients with hypothyroidism whose symptoms began "coincidentally" with either stress (or what the patients described as stress) or depression. As with Graves' disease, physicians must wonder whether the stress or depression triggered Hashimoto's thyroiditis and the resulting underactive thyroid, or vice versa. Does the sharp increase in Hashimoto's thyroiditis at menopause occur only because of hormonal changes, or does it also occur because stress and depression are more common around this phase of the reproductive cycle? Does the high frequency of thyroid imbalances after delivery of a baby result only from an immune system temporarily vulnerable because of hormonal swings, or do the stress of having to care for a new baby and the concomitant depression contribute to triggering the imbalance?

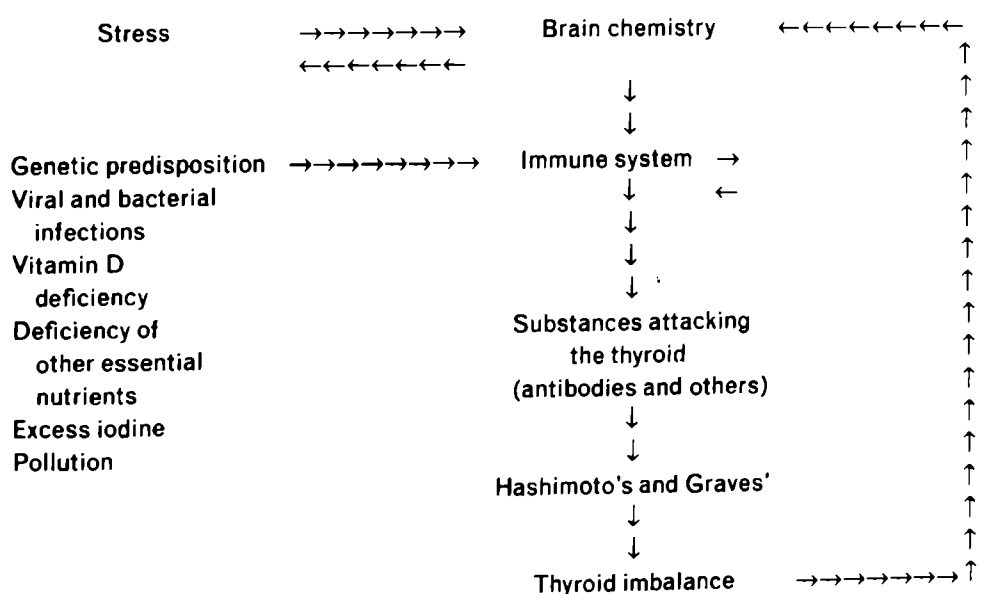
The effects of depression on the immune system are similar to those caused by stress. Therefore, the sequence of chemical interactions that leads to the triggering of an autoimmune thyroid disorder is also likely to occur during depression. Physicians are only beginning to pay attention to this scenario. A recent study showed that women suffering from postpartum depression are more likely to have Hashimoto's thyroiditis than women who do not experience postpartum depression—even when the hormone levels of the depressed women are normal.¹¹ Also, women with Hashimoto's thyroiditis, whether they are perimenopausal or postmenopausal, are afflicted three times more frequently with depression, even though they do not have a thyroid imbalance.¹² Clearly, depression and autoimmune reactions to the thyroid have the same root in the immunoendocrine system. Depression and the stress that often precedes depression could be the trigger of the immune attack on the thyroid, resulting in Hashimoto's thyroiditis and underactive thyroid.

Another extremely important component of the relationship between

Hashimoto's thyroiditis and mental stress is illustrated by a study that revealed that people hospitalized for depression have a higher frequency of Hashimoto's thyroiditis than the general population, even when their thyroid hormone levels are normal.¹³ Another study confirmed this association in an Italian community, showing that autoimmune thyroid disease was three to four times more common among patients with mood and anxiety disorders.¹⁴ Until recently, physicians have blamed hypothyroidism for causing depression and assumed that treating the underactive thyroid would reverse the depression. But sometimes the opposite is true: in many people, when physicians treat the thyroid imbalance, the depression—which might have been the source rather than the consequence of the thyroid imbalance—persists unless treated and addressed in its own right. Physicians should begin to suspect that depression, a form of major stress, might be the triggering event in many patients with Hashimoto's thyroiditis. Those patients exhibit the same escalation phenomenon described in patients with Graves' disease. For people suffering from either condition, steps to halt the cycle are the same: correct the thyroid hormone imbalance and address issues of stress and depression.

The accompanying diagram illustrates the complex set of interactions between brain chemistry and the thyroid that can contribute to the stress-illness escalation cycle.

THE BIOCHEMICAL BASIS OF THE ESCALATION CYCLE



The Brain and Thyroid Function

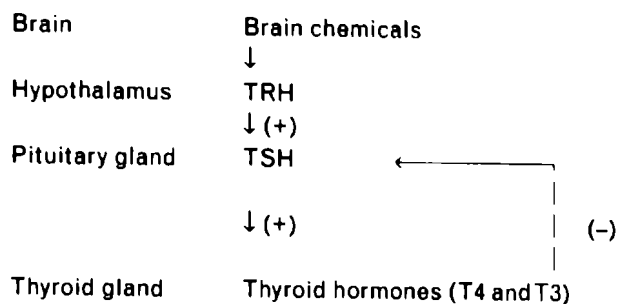
The amount of thyroid hormone produced by the thyroid gland compensates for the amount used by cells. The amount of thyroid hormone manufactured by the thyroid gland is primarily governed by the pituitary gland, which is situated at the base of the brain and produces thyroid-stimulating hormone, or TSH. The amount of TSH delivered to the thyroid gland tells the thyroid how much thyroid hormone to manufacture.

The pituitary gland senses any increase or decrease in thyroid hormone levels in the blood and reacts to the change by adjusting the production of TSH. Therefore the pituitary sees that the levels of thyroid hormones in the circulating blood remain normal and constant—and sees that the right amount of thyroid hormone is delivered to organs and to the brain. For instance, if the thyroid gland becomes damaged and produces less thyroid hormone than normal, the pituitary senses the decrease in thyroid hormone levels and releases more TSH. This stimulates the thyroid gland to produce more hormone and correct the deficiency. If, on the other hand, the level of thyroid hormone is excessive, the pituitary senses the change and decreases its TSH secretion, telling the thyroid gland to limit the production of thyroid hormone. For this reason, TSH has become the most widely used and most reliable test to diagnose a thyroid imbalance, even when it is minimal. TSH is also used to monitor treatment with thyroid hormone.

But the brain, when necessary, can have a say on how much thyroid hormone should be produced. Some areas of the brain, including those involved in regulating mood and behavior, can control the function of the pituitary. The intermediary between these regions of the brain and the pituitary is the hypothalamus, which communicates with the pituitary by emitting a chemical called thyrotropin-releasing hormone, or TRH. These areas of the brain send messages to the thyroid gland by making the pituitary increase or decrease the production of TSH. For example, the body's perception of cold is transmitted to the brain through brain chemicals that then communicate with the pituitary, telling it to increase the TSH level as a reaction to low temperature so that the thyroid produces more thyroid hormone and the body will generate more heat. If you starve yourself or fast for a prolonged time, or face extreme physical stress such as surgery or a major illness, your brain instructs the pituitary to produce less TSH so that your thyroid manufactures less thyroid hormone. This defense mechanism slows your metabolism and the rate of organ destruction. The brain is, in effect, protecting the body against starvation by lowering its metabolic rate. This also explains how the thyroid slows its function if you are suffering from an eating disorder, such as anorexia nervosa. The brain perceives an eating disorder as a potential threat to the body's energy reserves and will make the thyroid lower metabolism and

preserve as much energy as possible for survival. After a major stressful event, such as a war situation, the brain may send signals to the thyroid gland to increase its production of thyroid hormone for a long time, which, in theory, will allow the person to be hypervigilant. (See the accompanying diagram showing how the brain regulates the thyroid system.)

BRAIN REGULATION OF THE THYROID SYSTEM



The Thyroid and Postwar Syndromes

Many people who have been engaged in combat subsequently experience a multitude of mental and physical symptoms, such as shortness of breath, fatigue, headaches, chest pain, rapid heartbeat, diarrhea, troubled emotions, and sleep disturbances. These symptoms have been noted among veterans since the American Civil War and have been seen after most major wars, including the Vietnam War and the Persian Gulf War.¹⁵

Postwar psychoneurosis or, more familiarly, post-traumatic stress syndrome is a complex condition that mixes depression, anxiety, and a host of other symptoms. Although many studies have been devoted to finding the cause for this syndrome, few researchers have carefully studied the possible link between thyroid function, wartime stress, and subsequent thyroid disease. Evidence supports the notion, however, that this syndrome reflects, to a great extent, the levels of both thyroid hormones and cortisol that were produced in response to the stress of combat.

When you experience a major stress that you interpret as a significant threat, the brain relays a chain of signals to the endocrine system that may go on indefinitely, provoking significant emotional response, impaired cognition, and mood changes. One of the typical reactions is the stimulation of the thyroid gland to produce higher amounts of thyroid hormone. This pro-

longed stimulation explains why you remain supernalert, frightened, and anxious for a long time after a major event such as combat or physical or sexual abuse. The effects of the increase in thyroid hormone levels in relationship to the levels of cortisol explain to a great extent the symptoms experienced by people suffering from post-traumatic stress syndrome, such as those who fought in combat or lived through a war.¹⁶ Similar reactions occur after a natural disaster, an epidemic, a rape assault, a catastrophic illness, or an accident.

Combat veterans who experienced major stress have persistently high thyroid hormone levels at times and can feel extremely anxious as a result. They are unusually watchful or wary, angry, and irritable; they may have sleep or concentration problems. In essence, high levels of thyroid hormone, which are part of the self-preservation response that occurs during a major life-threatening situation, produce this extreme alertness.

People who experience combat or live in war-torn areas are not only at risk for experiencing post-traumatic stress syndrome. They also seem to become at risk for experiencing Graves' disease because of the effects of the stress on the immune system. For instance, doctors noted a significant increase in the incidence of Graves' disease during the Franco-Prussian War of 1870–71. During and following World War I, doctors observed a higher frequency of Graves' disease. For instance, at Camp Upton in New York, doctors noted that many people who were labeled as having a war neurosis had clear-cut symptoms of Graves' disease. The same doctors found that an overactive thyroid was responsible for some of the cases of "war neuroses" that they were treating.¹⁷ During World War II, an increase in the frequency of overactive thyroid was also noted among refugees from Nazi prison camps and among the people of occupied Denmark.¹⁸

Former president George H. W. Bush may be an example of someone involved in a wartime situation who ends up suffering from a stress–thyroid imbalance–stress cycle. Did, in fact, the stress of the Gulf War trigger or unmask the president's Graves' disease?

The speculation about stress triggering President Bush's overactive thyroid was prompted by the fact that his symptoms became evident approximately two months after the Gulf War cease-fire (February 24, 1991). While jogging at Camp David on Saturday, May 4, Bush experienced shortness of breath and an irregular heartbeat. This led doctors at Bethesda Naval Hospital to test his thyroid, which was found to be mildly overactive. Prior to the diagnosis, President Bush had experienced a few symptoms, which began two to three weeks before his admission to the hospital. Toward the end of March, he had decided to lose weight and exercise more. However, Bush's loss of seven to eight pounds over a two-week period was disproportionate to

his dieting and exercise. His secretary had also noted a trembling of Bush's right hand, which caused some difficulty writing. Bush's entourage at the time—including his wife, his trusted aide Patty Presock, General Brent Scowcroft, and others on the White House and residence staff—had not noticed any emotional distress prior to diagnosis of the president's Graves' disease.

There has also been speculation that President Bush's overactive thyroid had preceded the war. Some news reporters described the president as animated by an incredible level of energy immediately after Iraq's August 2, 1990, invasion of Kuwait.¹⁹ His heightened interest in sports activities at the time, his fast pace, and his overactivity led some to speculate that Bush might have been suffering from an overactive thyroid as far back as August 1990—almost six months prior to the war. This would put the onset of Graves' disease during the months of preparation leading up to the war, one of the most intense periods in Bush's presidency.

It must be noted that a number of alternative mechanisms have been identified that may well have played a more important role in triggering Bush's ailment. Two years before President Bush was diagnosed with Graves' disease, First Lady Barbara Bush had been diagnosed with the same condition. Cases in which partners are diagnosed with Graves' disease are known as "conjugal Graves' disease."²⁰ Conjugal Graves' disease may be due to environmental factors, such as toxins in the home or workplace, or even too much iodine and other chemicals in the water. The search for such factors in the White House was fruitless. Viral infections are also considered environmental in nature and can be implicated if there is a genetic predisposition, which both George and Barbara Bush could have.

(Coincidentally, the Bushes' dog, Millie, was suffering from lupus. When the news broke that the Bushes and their pet all had autoimmune disorders, the president's personal physician, Dr. Burton Lee, received numerous letters reporting cases of pets suffering from lupus whose owners have Graves' disease.)

There is increasing evidence that links infection, specifically infection by retroviruses, with Graves' disease. The possible link between a retrovirus and Graves' disease can be measured through the level of antibodies in the patient's system.²¹ It turned out that both the Bushes had significant levels of antibodies to the virus in their systems. These findings were never made public, however, perhaps because these results did not provide clear-cut proof that the virus was the direct cause of their condition. The medical evidence does strongly suggest, though, that in the cases of the president and Mrs. Bush, infection by a virus contributed to the Graves' disease.

Former president George Bush's case illustrates how difficult it is to

prove that stress was a factor in triggering the condition. Did infection by a retrovirus cause Bush's Graves' disease, or did it result from stress generated by the Gulf crisis? Perhaps the most likely scenario is that it was a combination of the two.

Stress Management

Stress management should become a central part of any strategy for treating thyroid patients. Persons who have suffered thyroid imbalances are always on the brink of falling into an escalation cycle. Some need counseling and psychotherapy; others need antidepressants and antianxiety medications. But everyone benefits from perfect thyroid balance and relaxation techniques, which will help avoid the overwhelming stress that kicks off the cycle. Your brain has to show your thyroid and your immune system that it is in control.

The effect of stress on thyroid disease is not limited to triggering the disease and contributing to the prediagnosis escalation cycle described earlier. Stress can hurt you at all phases of treatment, including when thyroid hormone levels have returned to normal. For instance, patients with Graves' disease who have been successfully treated with a several-month course of an antithyroid medication (methimazole or propylthiouracil) may experience a remission of their disease and no longer require medications to maintain normal thyroid levels. Although the autoimmune disease can become dormant as a result of the treatment—and the physician and patient hope that it will remain dormant indefinitely—the condition will never go away. In such patients, stress and difficulties coping with stress can easily result in flare-ups of overactive thyroid, even after many years of remission. A report presented in 1995 at the Eleventh International Thyroid Congress in Toronto showed that in patients with Graves' disease, stress could promote a relapse of overactive thyroid.²²

Stress undoubtedly increases the severity of the autoimmune attack upon the thyroid gland, even when the patient has been stabilized through adequate treatment. In one study of a large number of women whose glands contained dormant Graves' disease, researchers noted that many of the subjects became hyperthyroid during periods of stress. Once the stress went away, the functioning of the gland returned to normal.²³

Recent research has also shown that if you are treated with medications for Graves' disease, you are less likely to respond to the treatment if you are experiencing a lot of stress, if you have a personality background of depression or paranoia, or if you have mental fatigue.²⁴

Obviously no one can avoid negative events in life, but while you are having your thyroid condition treated, make sure you address your depression, engage in positive thinking, escape from stressful situations as much as you

can, and practice relaxation techniques consistently. (For more details on relaxation techniques, see Chapter 16.)

People who have experienced a thyroid imbalance may continue to suffer adverse effects even after their thyroid levels have returned to normal. Patients who do not feel the same as they used to, despite normal blood levels, are often those who have experienced lengthy cycles of stress-imbalance-stress. These long-time sufferers often describe symptoms similar to those who were affected by an enormous trauma, such as being the victim of a crime or a combatant in war. For this reason, physicians consider the aftermath of thyroid imbalance a form of post-traumatic stress syndrome.

This sounds serious—and it is. Beyond the suffering the patient experiences before diagnosis and into the midst of the cycle, the healing must continue even after the disorder has been corrected. It is essential for friends and loved ones to understand that the thyroid patient may remain vulnerable to the effects of stress for some time. For these long-time sufferers, stress management is one of the most crucial steps toward recovery. Their brain chemistry has been altered, and their ability to cope with stresses, even small ones, has become precarious. They need to assume control again.

After the patient has fallen into a destructive cycle, it is possible to interrupt the spiral by boosting the effects of medication and easing the lingering mental symptoms that have not diminished over time. The combination of support—proper treatment, stress management, and tender loving care—will halt the patient's anguish at the source.

"I'm stressed out," "I can't cope with the pressure." Although statements like these are tossed around lightly, it is important to pay attention to these feelings, in addition to avoiding and managing stress. It is even more important for those who have a thyroid hormone imbalance, have had an autoimmune disease, or have a genetic predisposition to this type of disorder. Like species that must live in water to breathe, these sufferers must consciously avoid and manage stress or they will get caught up in the vicious cycle characteristic of thyroid hormone imbalance.

Doctors diagnose thyroid disease more frequently than ever before. Many attribute this to wider availability of testing or improvements in technology, both of which have enabled us to conduct more sensitive diagnostic tests. It may also be because contemporary life brings greater stress and makes more demands on us. In 1930, Dr. Eli Moschowitz, in a review concerning psychiatric manifestations of Graves' disease, warned the medical community that "those influences that tend toward conflict and sensitization of the individual will breed Graves' disease" and suggested that Graves' disease was a "social disease and a product of higher civilizations."²⁵

If increasing stress is at the root of the rise in thyroid disease, then peo-

ple with thyroid problems must learn ways to cope better with stress. Relaxation techniques such as meditation, yoga, or tai chi can help prevent thyroid imbalance, especially if you have a family history of thyroid disease or other autoimmune conditions. Practicing stress management is essential for women who have reached menopause or have just delivered a baby, for people holding demanding jobs, and for people caring for demanding households.

There is no single best technique for stress management. The choice of a technique depends on whether you have other health conditions and on whether you can perform physical exercise. It could be deep-breathing exercises with meditation, sitting still while listening to soothing music, or mindful exercise such as yoga or tai chi. The ancient practice of tai chi has been shown to improve mood and emotions²⁶ and could be one of the most efficient ways to preserve a healthy mind, immune system, and thyroid. For people with no physical impairment, I recommend tai chi most often. Relaxing your mind while exercising will boost your brain chemistry and make you feel in control again.

Most of us suffer from stress at work. Continuing stress at work will put you at risk for becoming a thyroid patient. It will also make you more likely to suffer from lingering symptoms, even if your thyroid condition has been properly treated. Stress management programs in the workplace will help you to deal with stress and the symptoms of depression and anxiety. Use a cognitive behavioral technique at work to prevent depressive symptoms and panic disorder.

With thyroid conditions, the mind-body connection is not just part of the disorder; it is part of the treatment as well. The thyroid is the annex to the brain—the gland with which and through which the brain communicates. For this reason, it is very responsive to techniques that work on the body through the mind. As soon as you're diagnosed, you should begin working on your own to break your cycle of symptoms. You should expect your physician to control the thyroid hormone imbalance properly, but you as a patient must address your own stress issues. You must take responsibility for your healing regimen and become actively involved in getting yourself well.

Important Points to Remember

- Stress and an inability to handle stress can precipitate the onset of a thyroid imbalance.
- Thyroid imbalance, in turn, impairs your ability to deal with stress and makes you perceive trivial or annoying matters as more significant.
- The stress-illness-stress escalation cycle is a pattern commonly experienced

by thyroid patients. The key is to recognize the cycle and halt it by obtaining diagnosis and rapid treatment.

- If you have been diagnosed with a thyroid imbalance, stress management techniques should be part of your treatment program to maintain optimal physical and emotional wellness. If you are genetically predisposed to a thyroid imbalance, stress management techniques may prevent the onset of an imbalance.

3

HYPOTHYROIDISM

When the Thyroid Is Underactive

An enemy from within may ultimately have defeated Napoleon, one of history's greatest military leaders. Historians have noted that between 1804, when he was crowned emperor of the French, and his abdication in 1814, Napoleon experienced a steady mental deterioration that transformed him from an incisive, rapid decision maker to a lethargic, hesitant man. He became unable to control his temper and lost such attributes as self-discipline, common sense, and the ability to work for long hours. His minister of marine, Denis Decrès, declared, "The Emperor is mad and will destroy us all."

What led some historians to conclude that the root of this dramatic deterioration was a severely underactive thyroid were the many changes to Napoleon's physical appearance that coincided with the alterations in his personality.¹ Napoleon gained a significant amount of weight. His face became round and his neck thicker. His long, straggly hair became sparse and fine. His hands became covered with fatty tissue and were described as "pudgy." Napoleon also suffered constantly from constipation and itchy skin, symptoms of an underactive thyroid. He changed from an impressively fit and vital leader to a prematurely aged man at forty-six, appearing completely worn out.

Obviously, doctors of Napoleon's time did not recognize hypothyroidism as a medical condition. Until fairly recently, similar scenarios of gradual deterioration to extreme levels of illness, ultimately leading to an inability to function, were common among severely hypothyroid patients, simply because doctors did not have accurate means by which to diagnose hypothyroidism. In fact, prior to the 1970s, when sophisticated testing to diagnose thyroid imbalance became available, underactive thyroid was believed to be a rare condition. Physicians often recognized it only after pronounced changes in a person's physical appearance and mental behavior had become evident. The diagnosis was frequently overlooked until patients needed to be hospitalized

because of the effects of very severe hypothyroidism, including coma and insanity.² In some cases, the mental state of hypothyroid patients deteriorated to the extent that they became psychotic.³ In 1949, Dr. R. Asher described his patients as having “myxedematous madness.”⁴ It turned out, however, that an underactive thyroid is one of the most common medical conditions that affect humankind.

In Chapter 2, I explained that the two most common causes of thyroid imbalance, Hashimoto’s thyroiditis and Graves’ disease, are disorders of the immune system. Hashimoto’s thyroiditis is much more prevalent than Graves’ disease. It affects more than 10 percent of the population and is the most common cause of an underactive thyroid. Numerous other conditions may also cause your thyroid to underperform:

- Treatment of an overactive thyroid with radioactive iodine or medications
- Surgical removal of part or all of the gland to treat nodules, goiter, Graves’ disease, or cancer
- Transient hypothyroidism due to subacute thyroiditis, a viral illness that causes temporary partial damage to the thyroid gland (see Chapter 4)
- Transient hypothyroidism due to silent thyroiditis, an immune attack on the thyroid gland that also results in temporary damage to the gland (see Chapter 4)
- Previous radiation to the head or neck area
- Impaired blood supply to the thyroid after neck surgery for a non-thyroid-related problem
- Deficiency of the nutrient iodine (a common problem in several parts of the world; rare in the United States)
- Drug interactions (such as those from amiodarone, lithium, interferon, and interleukin-2)
- Absence or poor development of the gland (congenital hypothyroidism, childhood hypothyroidism)
- Genetic defects of enzymes that are essential for the manufacture of thyroid hormone
- Disorders of the hypothalamus or pituitary gland

Signs of Hypothyroidism

As thyroid hormone levels decrease, the functioning of most organs is affected. The person may begin to experience a multitude of physical symptoms, including:

- General tiredness
- Weight gain

- Aches and pains in joints and muscles
- Muscle cramps
- Constipation
- Thickened skin
- Dry and pale skin
- Brittle hair
- Hair loss, including loss of eyebrow hair
- Feeling cold even in warm temperatures
- Milky discharge from the breast (galactorrhea)

The more severe the deficiency of thyroid hormone, the worse these symptoms become—and you may begin to experience other symptoms. Your voice may become hoarse, deep, husky, and slow; your speech may become thick; your face may become puffy; and even your hearing abilities may lessen. Your skin, especially on the palms of the hands, may become yellowish due to a buildup of the nutrient carotene in the blood. (The process that normally converts carotene into vitamin A in the body is slowed by hypothyroidism. In fact, if you are taking vitamin supplements containing beta-carotene, yellow palms could be an early clue that you have an underactive thyroid.) Also, your feet may swell and you may become short of breath even with minimal exercise. Your heart rate decreases, and your blood pressure may become high as a result of a loss of plasticity of blood vessels. It is estimated that high blood pressure occurs in as many as 21 percent of people with an underactive thyroid.⁵

Other important effects of an underactive thyroid on your health are those caused by high cholesterol. An underactive thyroid causes or worsens hypercholesterolemia. Research has shown that 20 percent of women older than forty with high cholesterol levels have underactive thyroids.⁶ In addition to high cholesterol, low thyroid causes high homocysteine levels. The Third National Health and Nutrition Examination Survey has shown that high cholesterol and homocysteine are major reasons for the increased cardiovascular risk in patients with underactive thyroid.⁷ For these reasons, patients with hypothyroidism should receive folic acid to lower homocysteine in addition to proper thyroid hormone treatment. Low thyroid also causes changes in clotting factors and produces inflammation in blood vessels that contribute to worsening of peripheral vascular disease.⁸ Hypothyroidism can also cause anemia due to deficiency in iron, folic acid, or vitamin B₁₂. An underactive thyroid lowers your defense against infections. Often, as you become hypothyroid, you become more vulnerable to fungal and viral infections and your reproductive function is affected. Heavy menstrual bleeding or even cessation of menstruation is not uncommon in severely hypothyroid women.

Many persons with severe hypothyroidism complain of numbness and a sensation of pins and needles in their hands or feet. These symptoms may indicate a hypothyroid-induced neuropathy, a degenerative nerve condition. Some studies have shown that more than 50 percent of severely hypothyroid patients have damage to their peripheral nerves and some suffer from the pins-and-needles sensation.⁹ Another nerve-related condition that can occur in severe hypothyroidism is carpal tunnel syndrome, which is due to compression of the median nerve in the wrist. It causes tingling in your fingers and often resolves with thyroid hormone treatment.¹⁰ Other neurological and muscle problems that can occur as a result of severe hypothyroidism include:

- Myopathy, a disorder of muscle tissue that can cause muscle weakness and result in high levels of creatine phosphokinase (CPK), a blood marker for muscle disease
- A delay in relaxation of the muscle following contraction
- An excessive increase in the bulk of muscles (in children)
- Seizures

With severe hypothyroidism, you can also experience muscle coordination problems, which can prevent you from carrying out your usual daily activities. As a result of being unable to coordinate voluntary muscular movements (ataxia), you may experience loss of equilibrium, unsteadiness on the feet, lack of coordination of hands and feet, and trembling. You may also experience Dupuytren contracture (trigger finger) and decreased mobility of your joints.

Hypothyroidism can also cause sleep apnea, which refers to a condition in which there is a temporary cessation of breathing during sleep. It is caused by the collapse of the upper airways during sleep. Sleep apnea causes the oxygen level in blood to decrease, and this will lead to disruption of the sleep pattern. Sleep apnea perpetuates weight gain and causes fatigue, daytime sleepiness, and cognitive impairment. You are more likely to suffer from sleep apnea if you are older, if you are menopausal, and if you smoke tobacco and consume alcohol. Being overweight puts you at ten times higher risk for having sleep apnea. Sleep apnea promotes insulin resistance and high blood pressure and increases your cardiovascular risk.¹¹

Other physical symptoms that may indicate severe hypothyroidism—and that can lead to misdiagnosis—include gastrointestinal and respiratory symptoms such as:

- Decreased movement of the gastrointestinal tract, causing severe constipation

- Intestinal obstruction and, rarely, perforation (only in very severe hypothyroidism)
- Pleural effusion, an accumulation of fluid between the layers of the membrane that lines the lungs and chest cavity

The physical effects of hypothyroidism vary from person to person. In fact, you may experience symptoms related to only one organ. One patient may experience heart problems, whereas another may experience joint and muscle pain. A person with severe hypothyroidism who is not taking medication can slip into a state of myxedema coma, often triggered by exposure to cold, by medications that cause sedation of the brain, or by illnesses such as severe infection or stroke. A person in a myxedema coma has a very low temperature (hypothermia), may develop low blood sugar (hypoglycemia), and often needs a respirator. This condition is dangerous and can lead to death.

- **Mental Effects of an Underactive Thyroid**

Likewise, the mental effects of hypothyroidism vary from person to person, even among those with the same severity of hypothyroidism. Alex may develop severe depression as a result of hypothyroidism, whereas Julia may have only mild, barely perceptible depression, and Bill may exhibit a significant number of anxiety symptoms. The reason for these differences stems from the fact that each person may be predisposed to a different type of response, depending on personality makeup and the existence of a mental symptom that is either borderline or masked. An underactive thyroid can cause any of the following mental symptoms:

- Depression
- Mental sluggishness
- Increased sleepiness
- Forgetfulness
- Emotional instability
- Loss of ambition
- Decreased ability to pay attention and focus
- Decreased interest
- Slowing of thought and speech
- Irritability
- Fear of open or public spaces (agoraphobia)
- Audiovisual hallucinations and paranoid delusions (rare, only in very severe hypothyroidism)

- Dementia (usually in long-standing severe hypothyroidism)
- Manic behavior

Contrary to common belief, hypothyroidism does not necessarily mean that the thyroid gland has completely stopped functioning. The deficiency could actually range from a minimal amount to a more significant loss, depending on the damage to the gland. Although the physical symptoms become more pronounced in severe cases of underactive thyroid, disturbances of mood and emotions are likely to occur even when the thyroid hormone deficit is considered minimal.

Today we have the tools to catch and treat even the mildest cases of hypothyroidism. Technological advances have enabled us to realize that hypothyroidism is a common condition. While severe hypothyroidism, representing the extreme end of the spectrum, affects 1.5 to 2 percent of the general population, low-grade hypothyroidism affects 8 percent of the population.¹² There are also people with seemingly normal blood test results whose thyroid is actually deficient (see Chapter 14). If one includes the patients with borderline blood tests, the frequency of low-grade hypothyroidism may reach 10 percent of the population.

Although many people may have mild cases of hypothyroidism that remain stable throughout their lifetimes, some patients may experience a worsening of thyroid hormone deficit over time. Nearly 2 to 3 percent of people suffering from low-grade hypothyroidism progress to more severe hypothyroidism each year.¹³

Despite physicians' increased awareness of how common hypothyroidism is in the general population and the existence of precise testing of thyroid levels, many people still slip into the dark hole of hypothyroidism. If you suffer from any of the physical or mental symptoms described earlier in this chapter, have your doctor request a TSH (thyroid-stimulating hormone) test, which is the most sensitive test for detecting a thyroid imbalance due to a dysfunctional gland.

Let's take a closer look at how the principal mental and emotional symptoms of an underactive thyroid play out in real life.

"EXHAUSTED AND OVERWHELMED"

Regardless of whether a person's hypothyroidism is mild, moderate, or severe, the most common—and most noticeable—symptom of an underactive thyroid is fatigue. This tiredness typically has a physical component (from the slower metabolism) and a mental component (linked to depression). Depression and loss of brain power are the most common mental effects of an underactive thyroid. In Chapter 5, I will detail how hypothyroidism can either

cause depression or be a major contributing factor to it, including low-grade depression, chronic minor depression, or in extreme cases major depression. Undoubtedly, fatigue is a universal symptom of depression. Hypothyroidism will also make you sleep more than you used to.

Hypothyroid individuals who sleep more than they formerly did often attribute the increased sleepiness to just being tired when, in fact, it could be related to depression. In many hypothyroid patients, tiredness and sleeping more than usual are expressions of lack of enthusiasm and loss of interest in doing things, even customarily pleasurable activities. When the deficiency of thyroid hormone worsens, the mental slowing and the depression become compounded by the slowing of your body. This may make you feel as if you are drowning in a hole. Patients suffering from an underactive thyroid may also experience significant anxiety symptoms and a wide range of cognitive impairments.

CRIPPLING ANXIETY

In my clinical experience, anxiety is a much more common symptom of hypothyroidism than physicians generally acknowledge. Because anxiety and panic attacks are typical symptoms of hyperthyroidism, some patients with an underactive thyroid may become confused when they experience these symptoms yet are told they are hypothyroid. Anxiety can have a crippling effect on a person with an underactive thyroid accompanied by tiredness and depression.

Although in many people the anxiety is related to the depression itself, in other people anxiety symptoms are prominent with little or no depression. Even then, however, the thyroid hormone deficit and its effect on brain chemical transmitters result in anxiety. The fact that an underactive thyroid alters a person's mechanisms for coping with stress and lowers self-esteem may account for the prominence of anxiety as a symptom. Also, fears and self-doubt are often compounded by the awareness of defects in memory and concentration.

Hypothyroid people, especially women, often begin to feel they don't "look nice" and may be worried about being seen in public. Their anxiety may grow worse with the advent of other physical symptoms such as headaches, muscle cramps, pains, aches, and hair loss. Not knowing the cause of these symptoms increases their worries.

Marie, a twenty-nine-year-old nurse, had struggled through college with many of the effects of undiagnosed hypothyroidism. Because she suffered from so many symptoms of anxiety, a psychiatrist most likely would have diagnosed her condition as a generalized anxiety syndrome. She was extremely tired and depressed for almost two years before her thyroid problem was diagnosed. She

suffered anxiety from having attempted to overcome her physical symptoms, as well as difficulties with memory and concentration, which hurt her performance in a very competitive school environment.

She explained:

I started getting really tired my first year in college. The exhaustion and the need to sleep for extended hours, after what other people would consider a normal day, would really affect my life. I didn't have the desire to do a lot of partying because I was too tired. I had to drive several hours to the hospital to do my clinical training, so I related the fatigue to all the hours of travel and the stress of work and studies. My hair was falling out. My skin and eyes were dry all the time. I had a lot of generalized aches and pains that I couldn't explain.

I was so afraid that I would not pass my exams, that I would be a failure. I had myself so worked up and anxious that one of my college professors called me and said, "What is going on? You're not yourself." I told her I was fine, but I was just a ball of nerves. She said, "No, you're not yourself. You are normally very calm. Now, you seem to be running on adrenaline." I told her it must just be the anxiety of having to take tests.

An impaired memory and a decreased ability to focus and concentrate aggravated Marie's struggle. Her concerns about being unable to accomplish certain tasks generated more anxiety and unrealistic fears, eventually leading to crippling panic attacks. Four to six weeks after she started thyroid hormone treatment for her underactive thyroid, she began to feel much better. Four months later, when her thyroid test results were normal and stable, her depression and anxiety symptoms had greatly improved. Her memory and concentration returned to normal. All her physical symptoms resolved except for the hair loss, which persisted for more than six months after correction of the underactive thyroid.

Clearing the Mental Fog

Although you may be able to describe physical symptoms such as joint pain or muscle cramps in a relatively straightforward manner, when you try expressing in detail a subtle deficit in your cognitive abilities, you immediately realize the extreme difficulty of the task. A few years ago, one patient described the mental effects of hypothyroidism to me as "a brain fog." An underactive thyroid can leave you unable to remember details, names, or even events. As a result of low thyroid levels, your brain loses some of the power it normally has to grasp and process a thought. You may comprehend a concept while reading a book or listening to someone talk; then immediately afterward, you may be unable to fully describe it. The concept becomes blurred in your mind. Often when you try to express a thought, you cannot

think of the right word, whereas before, you used to quickly review several words and easily pick the most appropriate one. Concentration difficulties are unequivocally the most significant and disturbing mental consequence of low thyroid.

Lisa, an undergraduate student who was considering law school, became depressed and experienced many of the symptoms of hypothyroidism. "After my baby was born," she said, "I went into a funk. I was exhausted and blue. Sometimes I would get angry at my two older sons for no reason, which was not typical of me."

When Lisa first came to me, her mental dysfunctions had grown more debilitating, and she was no longer considering law school because of the cognitive impairments she was experiencing. She said:

I have lost the ability to concentrate. I ask a question and forget the answer immediately, and I have to ask again. It is humiliating. I think of one thing and then another, and I can't stay focused long enough to think either thing through. I have tried to hide my memory loss so no one would know how bad it is, but it's gotten to the point where I can't hide it any longer. I become easily confused. Now I am even afraid to drive, because I suddenly get disoriented.

Difficulties with memory and concentration are often symptoms of depression and anxiety disorders as well. But when the patient has an underactive thyroid, impaired cognition is worse and aggravates the anxiety.

Anne, a twenty-four-year-old secretary who had moderate hypothyroidism, had suffered from both depression and symptoms of anxiety for three years. But what made her seek medical help was her worsening memory loss. Her husband had become disabled four years earlier as a result of a car accident, which contributed to her general depression. In her words:

Before diagnosis, I definitely experienced a higher level of anxiety than I ever had before. I would begin ruminating on things and wouldn't be able to let them go for days. I would be worried about trivial things. I know when I am anxious: my heart beats faster, my muscles are tighter, I'm tense, and I snap at people. I thought a lot of that was related to my husband's health.

My anxiety symptoms became worse when I started noticing that I didn't have any memory anymore. It was awful at work. Also, I was not able to focus on anything I was doing. I had a hard time concentrating and could not find my words or express myself. My boss almost fired me. After a while, it became really scary. One day there was a new toaster sitting on my dryer. I called my sister and told her thanks for buying me this toaster, and she said, "I didn't buy it." I had bought the toaster, but I had no memory of buying it. My daughter would tell me she told me something, and I didn't remember. It was kind of a joke. We kept it light, but I was losing my memory.

Anne's case illustrates how impairments of memory and other cognitive functions can make hypothyroid patients more anxious. Her awareness of the memory impairment and her inability to perform at work generated more worries and worsened her anxiety symptoms.

Boris Yeltsin's Underactive Thyroid

In June 1991, after the collapse of communism in the Soviet Union, Boris Yeltsin was elected the first president of the new Russia. Over the following five years, the world observed Yeltsin change from a slim and quick-thinking political leader to a slow-walking, slow-speaking president whose political career was compromised by apparently serious health problems.¹⁴

Toward the end of the summer of 1996, Yeltsin's health had deteriorated to such an extent that even his public appearances were curtailed. Critics and the media charged that Yeltsin was no longer in full control of his own government. In September 1996, Drs. Michael DeBakey and George Noon, cardiovascular surgeons from my institution, visited Yeltsin and recommended multiple bypass heart surgery. However, the surgical procedure was delayed by a few weeks for several reasons, including gastrointestinal bleeding, poor heart function caused by a heart attack in late June or early July, and newly diagnosed hypothyroidism, which needed to be corrected before the operation.¹⁵

Until September 1996, Yeltsin's hypothyroidism, which had probably affected his health for some time, was undiagnosed. Long-standing, untreated hypothyroidism increases the risk of heart attacks because it can raise cholesterol levels, which, in turn, can lead to coronary artery disease (restricted blood flow to the heart).

Before the diagnosis, Yeltsin was also described as being "slow and stiff in his gestures." His speech was said to be slurred and his behavior "peculiar," and he sometimes disappeared from public view without explanation. Rumors of heavy drinking were widespread.

Yeltsin's weight gain and puffiness developed slowly. Pictures taken of him before his heart operation confirm that his facial puffiness gradually worsened. This could be an indication that his hypothyroidism had been long-standing and went undiagnosed.

It was clear that Yeltsin's hypothyroidism caused a lingering depression, which was noticed by political critics and the news media. He had to cancel several meetings because of tiredness and became "prone to sudden mysterious absences and bouts of unusual behavior."¹⁶ For months prior to Yeltsin's diagnosis, he withdrew from public view. In addition, his alcohol consumption increased.

We can only speculate on the extent to which Yeltsin's hypothyroidism (and quite likely the depressed mood that resulted from it) affected Russia during the years he was president. We can also only wonder whether these factors contributed to Yeltsin's loss of control of the government in the summer of 1996. It is quite possible, however, that Yeltsin's complete transformation after his bypass surgery was not due merely to the surgical correction of his heart problem. His turnaround after the treatment of his thyroid condition was spectacular and illustrates how thyroid imbalance could affect the course of history.

Physicians caring for political leaders, particularly those in high government posts, should be alert to the possibility of a thyroid imbalance anytime a change in personality, emotions, or judgment is observed and anytime a leader exhibits poorly explained symptoms.

Low-Grade Hypothyroidism

Once not discussed or even suspected, low-grade hypothyroidism and its effects on physical and mental health are increasingly pervasive. Numerous studies have now concluded that low-grade hypothyroidism can contribute to high cholesterol levels, infertility, miscarriages, tiredness, and depression. Research has shown that correcting low-grade hypothyroidism will result in a lowering of both total cholesterol and "bad" LDL cholesterol.¹⁷ Low-grade hypothyroidism can also cause high blood pressure and elevated triglycerides.¹⁸ Low-grade hypothyroidism causes the cells that cover blood vessels (endothelial cells) to lose their ability to protect the blood vessels. This abnormality reverses with thyroid treatment as well; left untreated, it will make you more likely to have coronary artery disease and heart attack. A recent study published in the *Archives of Internal Medicine* showed that patients with low-grade hypothyroidism suffer more from coronary artery disease and cardiovascular death than people with normal thyroid function.¹⁹ Untreated low-grade hypothyroidism can also contribute to worsening peripheral vascular disease. Recent research has shown that in older people, peripheral vascular disease was present in 78 percent of those with low-grade hypothyroidism and in only 17 percent of those with normal thyroid.²⁰ The reason for this increased risk of vascular disease among patients with low-grade hypothyroidism stems from elevation of blood pressure caused by low thyroid, higher levels of triglycerides and cholesterol, and high homocysteine levels. Even to this day, however, many physicians continue to believe that low-grade hypothyroidism has no significance. Some will tell their patients, "The condition isn't serious enough to treat." The most common physical symptoms experienced by patients with low-grade hypothyroidism are

fatigue, dry skin, hair loss, and cold intolerance. Some women may experience heavier and longer menstrual periods (menorrhagia) as a result of low-grade hypothyroidism.

In addition to having symptoms of depression or becoming vulnerable to depression (see Chapter 5), patients with low-grade hypothyroidism may experience hysteria, more frequent anxiety, and physical complaints. They may also have some impairment in memory-related abilities.²¹ The memory deficit and concentration problems improve with thyroid hormone treatment. In Latin America, it was found that people who lacked iodine in their diets were more likely to have impaired cognition.²² Too little dietary iodine often compromises the manufacture of normal amounts of thyroid hormone. Cognitive impairments in these people improved after supplementation of iodine in the diet. Another study, conducted in Sweden on older women with low-grade hypothyroidism, showed that the memory scores of 20 percent of these women improved after six months of treatment with thyroid hormone.²³ When sensitive memory tests, such as the Wechsler Memory Scale, were used, researchers have shown that more than 80 percent of people with low-grade hypothyroidism had impaired memory functions.²⁴ Low-grade hypothyroidism impairs both short-term memory and visual memory.

As a result of low-grade hypothyroidism, you may have difficulty remembering what you just read. Many people with low-grade hypothyroidism may believe that there is nothing wrong with them when in fact they have subtle deficits that can be demonstrated only by sophisticated neuropsychological testing.²⁵ Patients with low-grade hypothyroidism are also more prone to panic attacks. If you are suffering from any of the symptoms of underactive thyroid I have described or if your cholesterol is high, have your doctor give you a TSH test. If you are a woman age thirty-five or older, have your doctor test your thyroid every five years. If you have been diagnosed with low-grade hypothyroidism, you will probably require treatment for the rest of your life. In fact, the dose of thyroid hormone required to correct your imbalance is likely to increase as time passes.

The lack of awareness that low-grade hypothyroidism may cause suffering and deficits may lead physicians to ignore subtle thyroid test abnormalities consistent with this condition. If your doctor tells you that your thyroid insufficiency isn't serious enough to warrant treatment, do not accept this. Rather, insist on seeking help from a specialist knowledgeable about thyroid disorders. I worry that many people get tested but do not receive treatment despite the fact that they clearly have low-grade hypothyroidism that is causing symptoms.

Questionnaire:

The Physical Symptoms of Hypothyroidism

As we've seen, mental suffering due to hypothyroidism is not just limited to depression. The effect of thyroid hormone deficit on anxiety levels and thinking patterns produces complex neurobehavioral changes. Physical thyroid-related symptoms can also contribute to the worsening of depression, anxiety, and feelings of inadequacy. As hypothyroidism progresses, mental symptoms intensify, job and relationships are affected, and the person feels as if he or she were drowning.

An easy way to determine the likelihood that you may be suffering from hypothyroidism is to complete the following physical-symptoms questionnaire.

Has your hair become dry, or are you losing your hair?	Yes	No	_____
Have your menstrual periods been heavy in recent - months?	Yes	No	_____
Have you been suffering from joint aches and pains?	Yes	No	_____
Are your nails brittle?	Yes	No	_____
Have you been getting muscle cramps?	Yes	No	_____
Have you noticed a continuous weakness in your muscles?	Yes	No	_____
Has your skin been dry?	Yes	No	_____
Have your face and eyes been puffy?	Yes	No	_____
Have you been experiencing cold intolerance?	Yes	No	_____
Have you gained more than five pounds?	Yes	No	_____
Has your skin become coarse?	Yes	No	_____
Have you been constipated?	Yes	No	_____
Have you noticed in recent months a milky discharge from your breasts?	Yes	No	_____
Do you sweat less?	Yes	No	_____
Has your voice become hoarse?	Yes	No	_____
Do your fingers tingle?	Yes	No	_____
Has your hearing gotten worse?	Yes	No	_____
Has your heartbeat been slow?	Yes	No	_____
Have you been experiencing stiffness?	Yes	No	_____
Have you been fatigued?	Yes	No	_____
Have your eyes been dry?	Yes	No	_____
Have you been experiencing shortness of breath during exercise or reduced tolerance to exercise?	Yes	No	_____

If you answered yes to four or more of the preceding questions, you may be hypothyroid. If you answered yes to six or more of the questions, you are probably hypothyroid.

In Chapter 5, you will find questionnaires on the symptoms of depression and anxiety. Remember, even if your answers to the preceding physical-symptoms questionnaire indicate a low probability of hypothyroidism, if your answers to the Chapter 5 questionnaires indicate depression or an anxiety disorder, you still need to have your thyroid tested.

Hypothyroidism and Aging

One of my hypothyroid patients who was in her early twenties remarked that she felt as if she had begun to age at a rapid pace when her thyroid became underactive. This is quite insightful, as a number of the effects of thyroid hormone deficit are analogous to aging. As you age, your memory, concentration, and ability to process new information gradually become impaired. Hypothyroidism also causes a reduction in physical exercise, both because of direct effects on muscle function and because of how it impairs mood and emotions, in a way that mirrors how people often tend to become more sedentary with advancing years.

In fact, the normal aging process may be related to some extent to a naturally occurring decrease in thyroid hormone activity in the body. For example, the size of the thyroid gland decreases with age, and its structure and function also deteriorate gradually. The amount of the most active form of thyroid hormone (T3) in tissues decreases. This explains why the basal metabolic rate, which is highly regulated by thyroid hormone, also decreases with age. By the age of eighty-five, your basal metabolic rate has dropped to 52 percent of the levels you had at age three. As a result, normal physiological responses requiring thyroid hormone become less efficient. As you get older, you may have a more difficult time regulating your body temperature during extreme heat or cold. As you age, thyroid hormone deficit in your organs also promotes a slowing of the synthesis of essential proteins in your body, a hallmark of the aging process. This natural decline in thyroid hormone activity with age could conceivably contribute to the normal aging process.²⁶

Because the effects of thyroid hormone deficit are similar to the effects of aging, the physical symptoms and signs relied on to suspect hypothyroidism in younger people are less useful in the elderly. Both aging and hypothyroidism are associated with decreased mental activity, dry skin, constipation, depression, and an increased incidence of atherosclerosis and high cholesterol. Therefore, unless thyroid testing is done routinely, hypothyroidism may

never be uncovered. Quite often, the symptoms of hypothyroidism are attributed to the aging process per se or to other problems.

Older people with an underactive thyroid often experience only a limited number of vague symptoms. These symptoms may be mental confusion, weight loss, poor appetite, episodes of falling, aches and pains, weakness, muscle stiffness (which may be confused with Parkinsonism), incontinence, and depression. Consequently, hypothyroidism may go unrecognized and become severe over time because of the superficial resemblance to aging itself.

As you get older, you may be more vulnerable to serious mental and emotional problems when the gland becomes minimally underactive. In addition to depression and impaired cognitive abilities, which are quite common among older people afflicted with even minor thyroid hormone deficit, a profound and severe slowing of mental activity can occur if your underactive thyroid is severe enough and is not corrected promptly. This slowing of mental activity may become extreme and lead to dementia. Dementia due to hypothyroidism is caused by disruption in the brain structures that support recent memory, concentration, and problem solving.²⁷

Occasionally, family members bring a patient to the hospital or doctor's office because the person has become increasingly withdrawn and has been showing extreme slowing of mental activity. Even today, with the increased awareness of the frequency and effects of thyroid diseases, we continue to see older patients who progress to a state of dementia caused by severe hypothyroidism. Most patients with dementia are unaware of what is happening to them. Because Alzheimer's disease is one of the most common causes of dementia in older people, some patients diagnosed with dementia are thought to have Alzheimer's disease when in fact the dementia has been caused by an underactive thyroid that has not been treated for a long period of time.

The similarities between dementia caused by Alzheimer's disease and dementia caused by hypothyroidism led scientists to study whether patients with Alzheimer's disease are more likely to have a thyroid imbalance. It turned out that both patients and unaffected relatives of patients with familial Alzheimer's disease have a high frequency of Hashimoto's thyroiditis and hypothyroidism.²⁸ The association between Hashimoto's thyroiditis and familial Alzheimer's disease appears to be genetically mediated. Hypothyroidism may place a person with Alzheimer's disease at a high risk for having more mental and cognitive deficits. Consequently, if you are diagnosed with Alzheimer's disease, your doctor will typically test you for hypothyroidism so that thyroid hormone treatment will slow the cognitive deterioration if you turn out to be hypothyroid.

In Great Britain and the United States, the incidence of hypothyroidism rises abruptly after menopause in women and after the age of sixty in men.

Approximately 10 to 15 percent of postmenopausal women have mild, low-grade hypothyroidism, whereas in men the prevalence is 6 percent.²⁹ Nearly 45 percent of older people have some degree of thyroid gland inflammation characteristic of Hashimoto's thyroiditis. As noted earlier, minor thyroid imbalances often produce greater effects in the elderly than in younger people, and physicians often achieve spectacular results with adequate treatment. Thyroid hormone treatment prevents deterioration of cognition and the occurrence of depressive mood in older patients with low-grade hypothyroidism. The high frequency of hypothyroidism among older people and the similarities between symptoms of hypothyroidism and changes characteristic of the normal aging process attest to the importance of performing thyroid tests on older people who have noticeable changes in mood, emotions, or behavior.

Congenital Hypothyroidism

Nearly 20 million people worldwide suffer from brain damage caused by hypothyroidism due to iodine deficiency during the critical period of development in the fetus and infancy. When iodine is insufficient in the diet (iodine being essential for the manufacture of thyroid hormone), hypothyroidism and goiter (enlargement of the thyroid) are common effects on the fetus and the newborn. It has been estimated that in areas where nutritional iodine deficiency is common, 10 percent of newborns are hypothyroid. In the United States, iodine deficiency is not a cause of underactive thyroid in newborns. Nevertheless, 1 in 4,000 infants is born with congenital hypothyroidism, a condition often due to the absence or incomplete development of the thyroid gland.³⁰ In some newborns with hypothyroidism, the gland is not in the proper place in the neck. Instead, it is somewhere between its normal location and the base of the tongue, a condition called "ectopic thyroid." Congenital hypothyroidism due to a pituitary defect causing a deficiency in the pituitary hormone TSH is much less common and occurs in 1 in 100,000 newborns. In rare instances, hypothyroidism due to a pituitary deficiency or defective TSH is a familial and genetically transmissible disorder.

Because lack of thyroid hormone during the fetal stage and from birth to age two to three results in brain damage and mental retardation, systematic screening for congenital hypothyroidism has been implemented in the United States and many other countries. Ideally, the diagnosis is made during the first few days of life. The sooner thyroid hormone treatment is initiated, the better the mental outcome for such babies. For instance, the average IQ of children who were diagnosed as hypothyroid when they were between three and six months of age is only 19. Infants who are diagnosed late experience permanent learning disabilities, poor scholastic achievement, and

difficulties integrating themselves into society. However, congenitally hypothyroid children who are started on treatment early and receive adequate treatment have a normal IQ and satisfactory school performance when they are subsequently evaluated at the age of five to ten years. Ultimately, the intellectual and cognitive abilities of these children also depend on whether they take the necessary medications. If your infant suffers from congenital hypothyroidism and is taking thyroid hormone daily, you should know that soy-based formula interferes with the absorption of thyroid hormone in the intestines.³¹ The dose of thyroid hormone must often be increased for infants fed with soy-based formulas.

Genetic factors seem to play a role in the occurrence of congenital hypothyroidism, with many families having had several cases. Black infants are affected less frequently than white ones. A population study in Atlanta showed that infants with Down syndrome are thirty-five times more likely to have congenital hypothyroidism than other infants.³² According to recent research, permanent congenital hypothyroidism is also more common among twins, among female infants, and among infants who have a family history of thyroid disease or whose mother is a diabetic.³³ Also, you need to be aware of the fact that infants who are large for their gestational age are at increased risk for permanent congenital hypothyroidism. Without screening, 70 percent of infants are diagnosed within the first year, but at the cost of irreversible brain damage. One of the consequences of thyroid hormone deficit is deafness, also a symptom in patients with Pendred syndrome. Pendred syndrome, which is transmitted genetically and is defined by a genetic defect in the manufacture of thyroid hormone and by deafness, accounts for nearly 7 percent of all cases of childhood deafness.

Because the symptoms of hypothyroidism in the newborn may be minimal and do not necessarily point to the thyroid, the thyroid is routinely tested in the first six days of life. The screening is done by measuring TSH and/or T4 in blood from a heel prick collected on filter paper. Although screening should ideally include both T4 and TSH, because of cost considerations medical authorities unfortunately choose only one of the two methods. If the TSH method is used, the physician may overlook a case of hypothalamic or pituitary hypothyroidism (also known as central hypothyroidism) since, in this condition, TSH may be normal. The other important limitation of TSH screening is that some newborns with defective thyroid glands have a delayed rise in TSH. In these babies, the test results are normal at the time of screening but become abnormal weeks after birth.

If a T4 test is used as the primary screening method, central hypothyroidism is detected easily, but the pediatrician may miss low-grade hypothyroidism due to a defective thyroid. In such babies, the underactive thyroid will worsen over time and result in brain damage. Low-grade hypothyroidism at

birth is often due to abnormal positioning of the thyroid gland, which is also the most common cause of congenital hypothyroidism.

Because the T4 levels of many infants fall in the wide gray zone between low and normal that necessitates retesting, many medical centers choose TSH over T4 for screening purposes. Most countries use TSH for screening. One way to avoid misdiagnosis and unnecessary worrying is to make sure that, on initial screening, the TSH level is less than 20 milli-international units per liter. If it is higher, discuss with the pediatrician the advisability of testing the T4 level and retesting TSH later. Symptoms that should alert you that your infant might have congenital hypothyroidism include persistent neonatal jaundice, poor feeding, bluish skin color, weak muscle tone, swelling of the tongue, lethargy, constipation, and slow growth. If the TSH level was checked at the screening test and your infant is showing any unusual behavior, have the pediatrician test the baby's T4 level and rerun the TSH test.

COMMON CAUSES OF CONGENITAL HYPOTHYROIDISM

- Abnormally located thyroid gland (ectopic thyroid)
- Poorly developed or undeveloped thyroid gland
- Inborn error of thyroid hormone manufacture
- Hypothalamic or pituitary deficiency
- Transient hypothyroidism of the newborn
- Ingestion by the mother of drugs that inhibit the production of fetal thyroid hormone (antithyroid drugs)
- Prematurity
- Iodine deficiency
- Iodine excess
- Antibodies from the mother crossing the placenta and affecting the fetus's thyroid

Important Points to Remember

- The most common symptom of an underactive thyroid is fatigue. This fatigue is both physical and mental and often precedes other typical symptoms of depression and physical symptoms of thyroid hormone deficit.
- Anxiety symptoms—including excessive worrying and panic attacks—are common when the thyroid is underactive. Because these symptoms are also typical of an overactive thyroid, they often give rise to confusion.
- Regardless of its severity, hypothyroidism often causes cognitive problems such as poor memory, difficulties processing information, and lack

of focus. Such mental fog generates a vicious cycle of low self-esteem and increased anxiety.

- As indicated by blood test results, about 8 percent of the population has low-grade hypothyroidism. That figure might be as high as 10 percent if we include people with normal blood test results who still suffer from a thyroid deficiency.
- An underactive thyroid results in a form of accelerated aging. It can also cause brain damage and slow brain functioning.
- If a severely underactive thyroid remains untreated for a long time, the damage may be so dramatic that it can promote the occurrence of dementia in older people.
- If congenital hypothyroidism is not detected and treated early, it will lead to irreversible intellectual deficits.

4

HYPERTHYROIDISM

When the Thyroid Is Overactive

Common sense might suggest that if too little thyroid hormone can cause you to sink into a state of clinical depression and rob you of your ability to function as before, too much thyroid hormone would make you feel happy, perky, and on top of the world. This assumption, however, is only partially correct. When the brain is flooded with too much thyroid hormone, some people do experience a lasting elation. Thoughts race through the mind. Activities crowd the day.

Several years ago, my neighbor Nancy had the reputation of being overly friendly. She incessantly helped others with their chores and knew almost everyone in the condominium complex where we lived. She initiated conversations with everyone and constantly came up with new ideas and projects. It never occurred to anyone, including me, that what animated Nancy with this incredible energy and enthusiasm was an overactive thyroid.

Talking to a retired woman one day, Nancy mentioned that her electric bill was outrageous because she always felt hot and had to use air-conditioning most of the time. When I got close to Nancy, I noticed the shakiness in her hands and the stare in her eyes, symptoms of an overactive thyroid.

It turned out that Nancy's mildly manic (hypomanic) behavior was not her original nature. Nancy had, in fact, been a somewhat reserved person before she decided to move from Dallas to Houston to study and join her boyfriend. Nancy also suffered from many physical symptoms. She had lost weight despite eating more, her menstrual periods had become scanty, she had some acne on her face, her bowel movements had become increasingly frequent, she was losing some hair, and she had a rapid heartbeat—but to her all these symptoms were trivial. Her brain and body were animated by extraordinary energy and elation. Nancy did not even consider that something

might be wrong with her; she simply thought that she had become happier after joining her boyfriend in Houston.

Hyperthyroid patients may have an energy, optimism, and self-confidence that are not characteristic of someone who needs medical or psychiatric help.¹ Even when these personality traits appear suddenly and unexpectedly, they are usually considered positive. The person has lost weight. He or she has a positive attitude about life, is overactive, and expends effort far beyond his or her strength. Not surprisingly, mildly manic hyperthyroid patients can go for years without being diagnosed. They may not even seek medical help unless the symptoms become severe and disturbing.

Fred, a thirty-one-year-old construction worker, was hypomanic for four years as the result of an overactive thyroid. He was viewed as a superman on the job. He told me:

One time, three tornadoes came through, and nine thousand roofs in the area had to be redone. I was driving a truck by myself every day and throwing three hundred squares of shingles up on a roof. A square of shingles weighs 220 pounds, so that's over 6,000 pounds in a day. Several employees were hired who went out on the road with me for one day but quit. Then, after I would finish roofing, I would go work another part-time job.

Later, when we bought a farm, I fenced in ten acres in about three days. Never thought twice about it.

The tremendous physical energy Fred experienced reflects only a small part of the surge in mental power. It is almost purely a case of mind over matter. The brain is set at a fast pace, similar to what happens to people taking stimulant drugs. As this extraordinary feeling of power animates the brain, hyperthyroid individuals may experience significant anxiety and frustration, primarily because they cannot do everything they considered doing. As Fred described it:

I would ask you a question, and before you could finish answering, I could already tell what you were talking about and be going on to something else. The number of things I could keep up with at one time was phenomenal. I could watch TV, listen to a conversation, eat, and be doing half a dozen other things and keep track of them all like I was intimately involved in every single one of them.

Being hypomanic, Fred dismissed his physical symptoms as insignificant. His bowel movements had become more frequent, but a physician told him he had irritable bowel syndrome. His hands were shaking almost continuously, and he was feeling hot all the time, but he got used to it. Fred had

Graves' disease, the common form of hyperthyroidism that is caused by an immune disorder. After his symptoms had continued for four years, Fred finally sought medical help—but only when he began experiencing muscle weakness and shortness of breath due to heart failure, caused by his overactive thyroid.

Signs of Hyperthyroidism

Too much thyroid hormone in your system can cause a wide range of effects on your body. Although a complete list of these effects would include dozens of symptoms, the following are the most common:

GENERAL

Weight loss (or, less commonly, weight gain)

Fatigue

Shakiness

Feeling hot and becoming intolerant of warm and hot temperatures

Increased thirst

Hair loss

Eye irritation

SKIN

Increased sweating

Warm, moist hands

Itching

Hives

Brittle nails

CARDIOVASCULAR

Rapid heartbeat, palpitations

Shortness of breath

High blood pressure

GASTROINTESTINAL

Trembling of the tongue

Increased hunger and food consumption

Increased frequency of bowel movements

MUSCLE

Weakness

Decreased muscle mass

REPRODUCTIVE

Irregular menstrual periods
Cessation of menstrual periods
Decreased fertility

Among the most dreaded complications of an overactive thyroid are the cardiac effects. An overactive thyroid can cause irregular heartbeat and even damage to the heart muscle—damage that, in some patients, can result in heart failure, which may improve after the overactive thyroid is diagnosed and treated. Some patients with Graves' disease may be found to have mitral valve prolapse, a slight deformity that causes a characteristic heart murmur physicians can hear through a stethoscope. Most people with mitral valve prolapse experience no symptoms, but for some, it can cause chest pain and rapid or irregular heartbeat.

An excess of thyroid hormone, regardless of its cause, makes bone lose some of its mineral content. Women, more so than men, who have had an overactive thyroid for a long time can even develop osteoporosis (thinning of the bone), which could predispose them to bone fractures. The greater vulnerability of women stems from the fact that they are more naturally prone to suffer from bone loss and osteoporosis than men. The loss of bone affects mostly the spine and typically exceeds the loss that occurs as a result of menopause. You may lose bone as a result of too much thyroid hormone even if you are not menopausal. Research has shown, however, that once the overactive thyroid is corrected, some mineral buildup occurs in bone within the next two years.² Nevertheless, even after the overactive thyroid is corrected, you might have lost significant bone density. To determine whether you have lost bone density as a result of thyroid hormone excess, it is wise to have your doctor order a bone density test a year or two after your overactive thyroid has been corrected.

If you have too much thyroid hormone in your system, you could also be exposed to clotting problems, as the imbalance causes high levels of von Willebrand factor and fibrinogen, which are chemicals that promote clotting.¹ The endothelial cells (cells that cover the inside of blood vessels) are also altered, promoting further clotting problems.

Breast enlargement occurs in nearly a third of men suffering from overactivity of the thyroid. This enlargement, which doctors call gynecomastia, may be minor or significant enough to be troublesome. It is the result of too much estrogen—a consequence of the overactive thyroid in men. If you are a man who has experienced weight loss, anxiety, shakiness, heat intolerance, or other symptoms of an overactive thyroid, and you begin to feel enlargement and tenderness in your breast area, you need to mention it to your doctor and have your thyroid tested.

As with hypothyroidism, the severity of physical and emotional symptoms experienced by hyperthyroid patients does not always correspond to how elevated the thyroid hormone levels are. One study that carefully measured the severity of symptoms among patients with Graves' disease using a rating scale system found that symptoms may be mild in people whose thyroid hormone levels are high.⁴ The same study found that the severity of depression and anxiety does not correspond to the degree of elevation of thyroid hormone levels.

If an overactive thyroid remains untreated, the occurrence of severe illness can make the person slip into a thyroid storm, a dreadful condition characterized by mental deterioration, high fever, extreme agitation, and at times heart failure and jaundice.

Mental Effects of Hyperthyroidism

The mental effects of excess thyroid hormone are often described merely as *nervousness* and *hyperactivity*, terms that hide a deeper layer of mental and behavioral instability. In fact, in the mind of many physicians, the term *nervousness* connotes a physical effect (motor restlessness and the need to move around) rather than a mental effect.

Doctors frequently fail to emphasize the wide array of mental effects likely to occur in a hyperthyroid patient. The mental symptoms of hyperthyroidism may precede, or even be more prominent than, the physical symptoms. In fact, hyperthyroidism can precipitate or cause virtually any form of psychiatric condition,⁵ although admittedly, psychosis triggered by Graves' disease is an exceptional occurrence nowadays. Anxiety and panicky feelings may be the earliest and most noticeable symptoms of hyperthyroidism. As time passes, the expression of these symptoms changes with the appearance of other symptoms. The most common mental effects that we see in hyperthyroid patients are:

- Social anxiety disorder
- Anxiety
- Restlessness
- Panic attacks
- Depression
- Excessive concerns about physical symptoms, real or imaginary
- Disorganized thinking
- Guilt feelings
- Loss of emotional control

- Irritability
- Emotional swings
- Episodes of erratic behavior
- Bipolar disorder, mania, hypomania
- Paranoia
- Aggression

FROM FEELING ELATED TO LOSING TOUCH WITH REALITY

The elation experienced by Nancy and Fred is rarely a stable state characterized by self-confidence and unabated happiness. Although I have seen some patients with an overactive thyroid who stayed in a stable state of elation for months or even years without experiencing the downside of depression, the majority do experience periods of short-lived depression, such as in manic-depression. From a state of mild elation, or hypomania, patients can easily flip into an exaggerated form of elation (that is, mania) in which they lose touch with reality and begin exhibiting abnormal behavior.

Several of my patients have used the analogy that the elation of hyperthyroidism is like being on potent mind-altering drugs. Although your brain is more alert and animated by excessive thinking, your thought processes are disturbed by an inability to focus. You begin to find it hard to think something through in a way that would ultimately make any sense. Your eyes become glassy and your mind unfocused, which prevents sensible conversations. People may think that a hyperthyroid person is on cocaine. The speedy mind also becomes compromised by loss of memory. Impaired cognition coupled with rapid thinking may result in a flow of inconsistent and irrational statements and decisions.

The shift from an elated mood to the severe elation characteristic of mania brings with it confusion, poor judgment, impaired cognition, and abnormal behavior. In severe cases, hallucinations enter the picture. This is when the patient is viewed as “abnormal.” The transition from hypomanic to manic behavior may be gradual or abrupt; its onset may occur soon after the beginning of hyperthyroidism or be delayed until long afterward.

Medical literature overflows with cases of acute confusion, “schizophrenia-like” psychoses, and paranoia among individuals with Graves’ disease. Such descriptions are reminiscent of severe cases of mania or manic-depression. In some persons, unabated, advanced mania promotes criminal or paranoid ideas, distorted thoughts, and even hallucinations and auditory delusions. In the immediately pre–World War II to post–World War II era, many people with an overactive thyroid exhibited such profound disruptions of behavior that they were considered to have severe psychiatric illnesses.

According to some reports, up to 20 percent of patients with an

over-active thyroid had psychotic symptoms.⁶ Today, the increased awareness of thyroid disease and more sensitive thyroid testing have allowed earlier diagnosis. Therefore, the number of patients who reach advanced stages of psychosis due to hyperthyroidism has been significantly reduced. We now rarely see people becoming delirious or reaching a state in which they hear imaginary sounds or see delusionary visions, or exhibit bizarre behavior. Psychosis caused by hyperthyroidism has no unique features that will make a physician suspect that the thyroid is the cause of the mental condition.⁷ It can take the form of an acute affective disorder (i.e., depression or mania) or, less frequently, a schizophreniform paranoia and delirium.

Hypomania caused by an overactive thyroid can evolve into mania and abnormal behavior. Consider Connie, a thirty-four-year-old housewife who began to exhibit mild mania three months after she gave birth. For the first eight months, she felt in full control. In fact, like Fred, her mental capabilities were enhanced to such a point that she felt no one could have told that her behavior was abnormal.

"My mind was very occupied and full all the time," she said. "I could literally go around the clock, even while I slept. I could balance my checkbook in my sleep and wake up in the morning and it would be right. I volunteered for all sorts of positions—clerk for the PTO, room mother at school, assistant at church."

Several months into her hypomanic trip, however, Connie's cognitive ability became impaired. She had difficulty focusing on any particular thought. Her memory was "halfway gone." The evident confusion that set in changed her from a self-confident person to a disorganized and anxious one. Friends began to view Connie as inefficient, disorganized, maybe even "abnormal." She said:

After a few months, things weren't clear anymore. No longer was I getting the itemized lists in my brain where things were precise. Now they were getting confused, and I couldn't keep up with them. It got to the point where I didn't want to even look at the bills. I just avoided anything that had to do with concentration. I felt like I was losing touch with reality. I felt like a balloon that was about to pop.

It was worse when I tried to sleep. My mind was so full that I had a lot of sleeping problems. I would watch TV until there was nothing else on, and then I would try to go to bed, but I wouldn't be able to fall asleep until about the time my husband would go to work, like five a.m. And then I would sleep, but it was never a comfortable sleep: it would be overwhelmed with thoughts. My mind was like a computer with no more capacity. It was like there was so much up there, I couldn't decipher one thought.

The anxiety was getting worse because I wanted to hold on to reality. I didn't want to lose anything. So I tried keeping everything in my head, but I just couldn't.

I came to a point where I was worrying about my kids, about my marriage, about the bills. But my worrying was abstract because, at the same time, I could not concentrate on the things I was really worried about.

As her symptoms progressed, forgetfulness, confusion, and loss of a sense of reality led to irrational behavior. Connie became unable to handle basic tasks, such as taking care of her children.

One year after the beginning of her hypomania, Connie deteriorated to such an extent that her husband became convinced she needed psychiatric help. In Connie's words:

He kept saying, "If you don't get help and find out what's wrong, you are going to have to go into a hospital. Something is wrong. This is not normal." That word *normal* came up several times. I remember getting quite upset about it. Then it came to a point where I thought getting hospitalized was a good idea. The anxiety that I had, the frustration, the way my husband saw me not knowing which end was up, whether I was coming or going, forgetting to pick up the kids, made him think I was truly becoming crazy.

Connie's self-esteem gradually slipped. She changed from having a normal amount of security and self-esteem and being able to undertake any activity to being unable to do anything right. Amazingly, it took her a year and a half to go see her husband's doctor, who diagnosed her with Graves' disease. As in most patients with Graves' disease, the nature and pattern of Connie's symptoms changed. Connie had clear-cut hypomania for the first few months, during which her mind was creative, fast, and organized. Later, she was on the verge of becoming truly psychotic. If she had not been diagnosed in time, Connie could have reached a confusional state, with delirium and hallucinations. Connie's husband was amazed when he observed his wife regaining her sanity as her overactive thyroid was treated. In most patients, the manic or abnormal behavior improves or even resolves after the imbalance is corrected.⁸

UNCONTROLLABLE ANGER

The emotional responses to what you see or experience take place in the limbic system of the brain, where thyroid hormone plays an important role in regulating the perception of your environment and the way you respond to it emotionally. Whether people exhibit mild mania, depression, or anxiety, the excess thyroid hormone reaching the brain typically causes exaggerated emotional responses to what they see and experience. These responses are expressed as emotional withdrawal (often a component of a depressive state) or, conversely, as loss of emotional control. They become impatient and may inappropriately laugh or cry about matters that would

barely affect them under normal circumstances. They often become easily irritated over trivial issues, which may trigger anger or even aggression and violence.

This emotional instability makes such people feel as if they were sitting in a rocking chair on the edge of a cliff, teetering back and forth between being in control and out of control. Most individuals with an overactive thyroid feel their anger levels build up, and then they snap at anyone who comes along. It is indeed a sad place to be in. You don't understand what is making you this way, and if you don't like your behavior, you may think that you have become a bad person.

Mary Lou, a thirty-five-year-old schoolteacher, was referred to me by her gynecologist, who had diagnosed her with Graves' disease. Mary Lou no longer had menstrual periods and was suffering from heat intolerance and a rapid heartbeat, symptoms that had been attributed to early menopause. In my first encounter with Mary Lou, she described the familiar symptoms of impatience and intolerance. Later, she told me:

Everybody and everything bothered me. I was losing my patience more easily. I had always been very good dealing with people and calming them, but after a while it was, "Mary Lou, you have to calm down. You're not handling this well." Things that would frustrate me would prompt me to react immediately. In some cases, I would have a lot of patience with people initially, and then, when they would go on and on, I would interrupt and ask them to get to the point quickly.

I had a very short fuse with my children, which was odd. I was known to most people as a very patient person. I teach Sunday school, and I couldn't do that anymore. I didn't even have enough patience to read the lesson and to teach it. My co-teacher said I needed help. She told me that I had been teaching Sunday school too long and needed a break. That's the way she put it.

I felt the worst about my oldest son. Being a teenager, he couldn't do anything to satisfy me. If I said, "Take out the trash," he didn't take it out fast enough. If I said, "Put away your clothes," he didn't fold them fast enough. Everything that happened was surrounded by the word *fast*. It was like my mind no longer controlled my emotions. My emotions were in total control of my mind.

Some of my patients have described the loss of control and altered behavior related to hyperthyroidism as "Graves' madness" because they felt their acts and behaviors were typical of craziness. People may become belligerent and domineering, or have spells of anger and irritability interspersed with intermittent free-floating anxiety, leading to irrational behavior and inappropriate decisions.

WAVES OF ANXIETY

Undoubtedly, the most common mental effect of an overactive thyroid is anxiety. The anxiety due to hyperthyroidism, however, is seldom a pure form of anxiety disorder. It is an exaggerated form in which the increased worrying and overall feeling of insecurity and instability are worsened by mood swings, anger, inability to focus, and foggy memory. Often, these mental effects exacerbate each other, resulting in a tumultuous mental state. Along with the insidious intrusion of anxiety, panic attacks are another form of anxiety disorder that often appears.

The rising tide of thyroid hormone in the blood and the flooding of brain cells with thyroid hormone often produce unusual feelings. You feel as if you are going to suffocate or your soul is about to leave you. Your heart starts beating very fast. Your palms become sweaty, and you may break out in a generalized sweat. The inability to control your body takes over. You have not passed out but feel you are about to. You may get dizzy. The world around you looks strange, almost unrecognizable.

You also feel frightened—a feeling that actually begins at the peak of despair. After the sense of despair plateaus and wanes gradually, you feel drained—not just tired, but literally exhausted. Then you try to rationalize and understand what happened—to your body, to your mind, and to you. The first time this sensation strikes, you might recognize it as a panic attack. You want to pick up the phone and call a friend, your spouse, or a relative and share these feelings. Now that the anxiety attack has resolved, you are exhausted, wanting only to rest and understand what just happened to you.

A few days later, in the same unpredictable fashion as the previous time, another wave of anxiety attacks you. You panic and try to fight it. In the process, your symptoms get worse and worse. You desperately try to figure out what is wrong with you, feeling that your life is out of control and no longer your own, until finally all you feel is exhaustion. This lasts only a couple of hours, and life resumes its course.

Quite often you are embarrassed by these feelings or even frightened to discuss them with the people closest to you. Having panic attacks induces a constant fear. Because these episodes come and go unpredictably, you worry that you might experience the next one when you are closing a business deal or talking with people at a dinner party. Between these attacks, you may be seized by a chronic, constant anxiety. You tend to worry about the most trivial things—things that never bothered you before. While you should be concentrating on a task at work, your brain goes on automatic pilot. It drifts off the task you are performing, and gradually the worries and anxiety worsen and take over your mind so your concentration is sporadic and you cannot remember what you are supposed to be doing. This irritates and upsets you. You don't understand why you are reacting this way. As anxiety builds up,

you, your closest friend, or your spouse notices that you are becoming a different person.

Your moods swing and are no longer stable. In the morning, you may be happy and outgoing, making plans and excited about new projects. Two hours later, you become angry, irritable, even sad. You may be at work and this wave of sadness will drain your energy and your desire to function normally and be productive. You want to be by yourself. You have difficulty controlling your anger, and you may respond to someone in a nasty way. The waves of anxiety, constant worries, and mood swings build up, affect and reinforce one another, and slowly transform your personality.

I began to see Linda for a second opinion two years after she was diagnosed with Graves' disease. She was in great despair and had almost given up on the possibility of leading a normal life again. Approximately two years before the diagnosis was made, she was thirty-six and working in a stable job as a secretary. As a result of downsizing at her company, however, her workload had doubled. She always felt behind and unable to accomplish her assigned tasks. Her stress level mounted and she began to worry about the financial repercussions if she were to lose her job. She then began noticing changes in her health.

"I started experiencing symptoms of nervousness, irritability, and increased anger," Linda said. "I was losing weight but didn't really pay attention to that. The symptoms progressed and became more intense as the months passed. I was attributing the way I was feeling to nerves, stress, and emotional reactions to things in my life, especially to my job situation."

For the first three to four months, the predominant symptoms revolved around anxiety:

It was a disabling anxiety. I felt like I couldn't breathe, and I would become very dizzy and disoriented. The world did not look real to me any longer. It was like a disorienting feeling. I was having heart palpitations and was short of breath. It was embarrassing to be in a public place, so I would retreat somewhere to try and stop the feeling. The anxiety would occur randomly. I soon developed a fear of anticipating it happening in grocery stores, the post office, the office, in almost any setting. I had no control. I didn't know when it would happen. There was no connection or any way I could logically tie it together. The intense wave would come on maybe three or four times a day, lasting no more than ten to fifteen minutes, and wane off over an hour. Then I would be drained and exhausted. I knew it was not a realistic reaction, that I had nothing to fear. But it's hard to correlate your brain to your body.

Linda began to exhibit a fear of crowded or confined places (agoraphobia), although such circumstances had never frightened her before. People

with agoraphobia have difficulty traveling away from home because unfamiliar places, which they perceive as unsafe, trigger panic attacks.

Four to five months later, Linda began to experience other symptoms in addition to her recurrent panic attacks:

It felt like a furnace burning inside my body, and the temperature was not adjustable. No matter how cold my external environment was, I was raging inside with heat. There were days I would open the freezer door and put my head in to get relief from the heat intolerance.

I was going through a lot of symptoms that I was dismissing and trying to ignore. I was eating many times a day, and after I finished a meal, I had frequent bowel movements, almost immediately. Then I started having nausea and lightheadedness. I lost hair from all over my head. I had terrible night sweats. My eyes had begun to bulge. At first, they just seemed larger. The people around me did not notice it. I had a dry, gritty feeling in my eyes. Nobody could figure it out. I went to an ophthalmologist, who didn't pick it up and attributed it to allergies.

The tremors began about the same time. I felt I was shaking all over my body, and more so in my hands. It was difficult even to squeeze toothpaste onto a toothbrush. I had to steady my arms. I would drop things. I couldn't polish my fingernails. I couldn't read my own handwriting. Anything that required any dexterity at all was lost to me. I was very short of breath. It would make me short of breath going up a short staircase. I had a lot of muscle weakness in my arms and legs. I couldn't get up from a squatting position. My legs were so weak, I had difficulty even climbing the stairs.

When I finally decided something had to happen, I was afraid I had muscular dystrophy. The muscle weakness was what made me go to the doctor.

The muscular effects of hyperthyroidism can cause weakness so severe that patients have difficulty walking, which often leads doctors to suspect a neurological condition. Some patients with muscle weakness due to hyperthyroidism may be confined to wheelchairs until the hyperthyroidism is diagnosed and treated. Linda was so disturbed by her muscle weakness that she rushed to see a physician, who referred her to a neurologist. Although extensive neurological testing was done, the results came back normal, and her Graves' disease remained undiagnosed.

In addition to Linda's anxiety feelings, which were heightened when her muscle weakness became quite pronounced, her moods changed frequently. Sometimes she was exhilarated; other times she exhibited symptoms of depression.

Finally, a chance encounter gave Linda the clue she so desperately needed:

After a full year of symptoms, I went to a party. A total stranger noted my glassy eyes and my nervousness. She asked me if I had a thyroid condition. That was the breakthrough. She told me she had Graves' disease herself and that I appeared to have the same thing. I was shocked and relieved. I knew a little bit about it because President Bush and his wife had recently been diagnosed with it. Two days later, I saw an endocrinologist who confirmed the diagnosis and started me on treatment.

DEPRESSION

The occurrence of depression in hyperthyroidism may seem paradoxical because depression has been linked primarily with an *underactive* thyroid. It is rare, however, for hyperthyroidism to cause clinical depression that warrants admission to a psychiatric ward.⁹ In some, antidepressants may aggravate the situation and only the use of antithyroid drugs to normalize thyroid function dispels the depression. It is not clearly understood whether such individuals become depressed because of a predisposition to depression or because of the overwhelming preexisting stress generated by the hyperthyroidism. One doctor described a patient who developed depression during both hyperthyroidism and hypothyroidism,¹⁰ leading the doctor to conclude that the person's underlying makeup is important in determining the effect. Depressed patients suffering from hyperthyroidism tend to experience more insomnia, weight loss, agitation, anxiety, muscle pains, and fatigue than depressed patients who have a normal thyroid level.¹¹

Alicia suffered from depression as a result of hyperthyroidism. Alicia became hyperthyroid six months after she had a baby. Because her husband was a student, Alicia had to work overtime to support her family. She and her physician initially attributed her depression and anxiety to working too much. She said:

At first, I had headaches to the point where the upper left part of my face would feel numb. My physician told me I had migraine headaches. I became withdrawn. I was tired, lost interest in everything, and started having suicidal thoughts. I felt I did too much. I would go to bed and sleep from six to ten, get up for an hour and eat dinner, and go back to sleep until the next morning and still be exhausted.

I had a lot of guilt feelings and lost interest in regular activities. I could not cope with problems. If I had a problem with my husband or child, I would overreact. I would break down in tears. I was very irritable and became intolerant of my child.

Many of Alicia's symptoms satisfied the criteria for depression. Although the depression can be mild, as in Alicia's case, occasionally a hyperthyroid person may slip into a major depression. In fact, major depressive disorders

accompanied by generalized anxiety disorders are much more common in patients with hyperthyroidism than in the general population.

PHYSICAL AND MENTAL EXHAUSTION

Physicians and patients often associate tiredness with hypothyroidism and hyperactivity with hyperthyroidism. Yet in a significant number of patients suffering from thyroid hormone excess, tiredness and exhaustion may be the initial and most prominent symptom. As in hypothyroidism, the tiredness in hyperthyroidism is both physical and mental.

In some patients, tiredness can be extreme. One middle-aged woman who was suffering from hyperthyroidism said, "You feel you're dragging yourself through the day. I remember standing at the supermarket waiting at the checkout counter. A friend came up behind me and carefully bumped me to get my attention. I was so exhausted that I didn't even react to it. I turned around and just looked at her."

Suzanne, a twenty-four-year-old salesperson in a clothing store who had always been energetic and enthusiastic, began complaining of tiredness three months before her wedding date. She blamed her symptoms on doing too much as well as stress from her wedding preparations. Her symptoms were in fact due to hyperthyroidism. She was diagnosed with Graves' disease one year after she got married.

Here's how she described the beginning of her symptoms:

I was really tired. I'd sleep ten hours a night and still be tired at work. On my days off, I would lie on the sofa. It wasn't a lack of exercise because at my job I am walking all the time. That was the most annoying thing. It wasn't like a good fatigue but just a constant irritant. Not like after you've done a hard day's work. I would wake up and feel better in the morning, and then three hours later I would be tired again. My heart rate was increasing. It was kind of scary. I would turn up the air conditioner, and my fiancé would be freezing. I was so hot. I was sweating, and I only had the sheet on me. I had hot and cold flashes. Whatever I did, it didn't really help.

When I would have headaches, I wouldn't even be able to think clearly. I wouldn't even be able to speak clearly. I felt like my vision changed. I just thought I was getting older and didn't have as much enthusiasm or energy. I started a walking program, but it did not help me to increase the energy. It would make me even more tired, and I couldn't understand why. That is when I would have the heart palpitations because I would push myself.

I withdrew from people. I was too tired to open my mouth and waste my breath to talk to them.

As illustrated by the cases described above, each person may experience a different pattern of mental effects, although the majority of patients exhibit

anxiety and intellectual deficit. These differences in mental suffering stem not only from the wide range of severity of hyperthyroidism but also from differences in personality makeup. Some people with quite high thyroid hormone levels experience few or no mental effects. In contrast, some people with marginal or low-grade hyperthyroidism (discussed in the next section) suffer a great deal from anxiety, tiredness, depression, and mood swings.

Low-Grade Hyperthyroidism

Recently, doctors have become more aware of the wide range of physical and mental effects of low-grade hyperthyroidism. This condition is defined as thyroid hormone excess that has not yet resulted in abnormally high thyroid hormone levels but has caused TSH levels to become low. Low-grade hyperthyroidism often results from an overactive thyroid gland due to Graves' disease or to thyroid lumps that produce excessive amounts of thyroid hormone. It may also result from taking too much thyroid hormone. Low-grade hyperthyroidism due to Graves' disease often resolves spontaneously. Even if it resolves, it can recur down the road. Low-grade hyperthyroidism can progress into more severe hyperthyroidism and can exacerbate cardiac abnormalities in patients with underlying preexisting heart disease.

Low-grade hyperthyroidism can cause symptoms of depression, rapid heartbeat, weight loss, heat intolerance, increased appetite, increased sweating, and trembling of the fingers. It is likely to make a person more irritable and anxious.¹² This minimal thyroid hormone excess can also result in bone loss over time, particularly in postmenopausal women.¹³ Although minimal thyroid hormone excess can also affect the bone density of premenopausal women, this negative effect on the bone is counterbalanced by estrogens. Low-grade hyperthyroidism may provoke heart rhythm problems in older patients. In addition, it can disturb the functioning of the heart¹⁴ and lower cardiovascular fitness.

Hyperthyroid People at Work

Job performance is frequently affected by an overactive thyroid. In extreme cases, patients even become mentally and emotionally disabled. Often they resign from their jobs or are fired because they could not cope with the demands. When they seek other job opportunities, they are frequently unsuccessful because of their appearance, cognitive impairment, or inability to handle themselves well during interviews (displaying erratic behavior or a short temper, for example). Let's look at how the mental effects of hyperthyroidism can interfere with one's job.

At twenty-nine, Amy had been working at a paper company for five years. Although her job performance had been excellent, when Amy became hyperthyroid, she got irritable and could not maintain a good working relationship with other employees. "Everything bothered me at work. I worked in the sales office, but I handled a situation on the retail floor badly, and the owner of the company heard part of the story. He came back and yelled at me in front of a whole group of people. I couldn't take it. I couldn't erase it from my mind. I wasn't getting paid enough money to deal with the public humiliation. It was so stressful, I decided to leave."

Another patient, Sabrina, who was a department store assistant manager, was terminated from her position because she couldn't cope with the demands of her work. As Sabrina put it:

My boss kept asking me, "Why aren't you working?" I was trying to express to him how sick I was. Finally, they asked me to leave. I spent several months job hunting, to no avail.

I was shaking and looking wild-eyed. I had dropped sixteen pounds. I was probably looking a little emaciated. People probably thought I was a drug addict or an alcoholic because I was antsy and nervous. I felt insult added to injury when no one hired me or called me back. I was sensitive about my nervous behavior and mannerisms. I was aware I was talking very fast. I had to be very careful and monitor how quickly I spoke. Yet I didn't realize just how fast I was talking. People couldn't even understand me.

The fact that I was not hired compounded everything. Even when I was diagnosed, I thought it was the beginning of getting out of this vicious circle. But it took some time after my thyroid was regulated to find a suitable job.

Questionnaire: The Physical Symptoms of Hyperthyroidism

An easy way to determine the likelihood that you may be suffering from hyperthyroidism is to complete the following questionnaire.

Have your nails been brittle or separating from the nail bed?	Yes No _____
Has your skin been unusually warm?	Yes No _____
Have you been sweating more than usual?	Yes No _____
Have you been experiencing hair loss?	Yes No _____
Have you become intolerant of heat?	Yes No _____

Have your menstrual periods become scanty?	Yes	No	_____
Have you been unusually hungry?	Yes	No	_____
Have you been experiencing diarrhea or increasingly frequent bowel movements?	Yes	No	_____
Do your fingers shake constantly?	Yes	No	_____
Has your heartbeat been rapid at rest?	Yes	No	_____
Have you lost more than five pounds without changing your dietary and exercise habits?	Yes	No	_____
Do you get short of breath with exertion, or has your tolerance to exercise been reduced?	Yes	No	_____
Have you been experiencing generalized muscle weakness?	Yes	No	_____
Are your palms sweaty?	Yes	No	_____

If you answered yes to four or more of the preceding questions, you may be hyperthyroid. If you answered yes to six or more of the questions, you are probably hyperthyroid.

Other Hyperthyroid Conditions

Even though Graves' disease accounts for 70 percent of the cases of overactive thyroid that are routinely diagnosed, you need to make sure that your overactive thyroid is not the result of another thyroid disorder that can be easily confused with Graves' disease. For instance, some patients have an overactive thyroid because one or more lumps (called nodules) within the thyroid gland become autonomous. These autonomous nodules take over the function of the entire gland but produce more thyroid hormone than the body normally requires. This condition, which is common in older people, is called simple toxic nodule or multinodular toxic goiter, depending on whether the gland has one nodule or whether several of the hyperfunctioning nodules begin to grow independently from the rest of the gland.

To confirm these disorders, your doctor will order a nuclear thyroid scan and uptake. The nuclear medicine doctor will have you ingest a tiny amount of radioactive iodine, which will be readily picked up by the thyroid gland and can be detected when the thyroid area is scanned. Six and twenty-four hours after you ingest the radioactive iodine, a counting probe placed over your neck will detect the radioactivity present in your thyroid. High scores on this radioactive iodine uptake test tell your physician that your thyroid is overworking and producing excess levels of thyroid hormone. The pictures taken of your thyroid (scan) will show the nodule(s).

Doctors can treat simple toxic nodules and multinodular goiters by administering radioactive iodine to destroy the overactive areas or by performing surgery aimed at removing the portion of the gland that contains the toxic nodules. Medications are not an option, as they are for patients with Graves' disease.

An excess of thyroid hormone may also result from silent thyroiditis and subacute thyroiditis, two conditions that cause a temporary destruction of thyroid cells that leak too much of the preformed thyroid hormone into the bloodstream while the cells are being destroyed. These conditions are easily confused with Graves' disease.

Silent thyroiditis is the result of what is believed to be a transient immune attack on the thyroid gland that produces hyperthyroidism. The hyperthyroidism is often mild and lasts only a few weeks, although in some cases it can go on for as long as three months.

After resolution of the inflammation and (temporary) destruction of the thyroid gland, you may become hypothyroid for a few weeks because the damage to the thyroid renders the gland unable to meet the usual demands of the system. After a few weeks of hypothyroidism, the thyroid repairs itself, leading to regeneration of a normally functioning gland. Your gland may not fully recover, however, and you may have residual permanent hypothyroidism. If you consult your physician during the initial period, when your thyroid levels are still high, it is sometimes difficult to tell whether you have silent thyroiditis or Graves' disease. A radioactive iodine uptake count will differentiate between the two conditions, however. Typically, a high count indicates the overactivity characteristic of Graves' disease, and a low uptake indicates the temporary destruction characteristic of silent thyroiditis.

A similar scenario occurs when the cause of your hyperthyroidism is subacute thyroiditis. This is a viral infection of the gland that results in temporary destruction followed by transient hypothyroidism and then recovery. This condition is often more easily diagnosed because you are likely to suffer from fever and pain in your neck area that may spread to one or both ears. Many viruses can cause subacute thyroiditis, including those that have been tied to the common cold, mumps, and measles. The key test to confirm that your hyperthyroidism is caused by subacute thyroiditis is the radioactive iodine uptake count, which will be low in subacute thyroiditis and high in Graves' disease.

Prior to the infection of the gland, you may experience a sore throat, pains, aches, headaches, fever, and a cough. During the hot phase, most physicians prescribe nonsteroidal anti-inflammatory drugs and a beta-blocker. One of three patients with subacute thyroiditis may need cortisone treatment because the inflammation is severe and the pain excruciating. At times, the gland may remain inflamed for several months even after thyroid levels have

returned to normal. Taking cortisone may then be the solution. Even though the majority of people who experience subacute thyroiditis regain normal thyroid function down the road, some patients may remain permanently hypothyroid. One study showed that twenty-eight years after an episode of subacute thyroiditis, 15 percent of patients require thyroid hormone treatment for residual hypothyroidism.¹⁵ Although steroids are helpful for the symptoms, they do not prevent the occurrence of permanent hypothyroidism. The message here is that you need to have your thyroid retested down the road to make sure that you have not become hypothyroid.

The accompanying table summarizes the diagnostic characteristics of the most common causes of hyperthyroidism.

CAUSES OF HYPERTHYROIDISM

	TSH	Thyroid Hormone Levels	Radioactive Iodine Uptake
Graves' disease	Low	High	High
Single toxic nodule	Low	High	High
Multinodular toxic goiter	Low	High	High
Silent thyroiditis	Low	High	Low
Subacute thyroiditis (viral)	Low	High	Low
TSH excess*	Normal/high	High	High

*Such as from a tumor in the pituitary gland or a dysregulation of the pituitary cells that manufacture TSH.

Hyperthyroidism in Older People

Hyperthyroidism is quite common in older people, affecting approximately 1.5 percent of men and 1.9 percent of women older than sixty.¹⁶ The effects of hyperthyroidism on older people are often different from those experienced by younger people. With respect to physical symptoms, thyroid enlargement, intolerance to heat, increased perspiration, and increased appetite are not as common in older people. Heart problems, however, such as atrial fibrillation, as well as weight loss and reduced appetite, increase in frequency with aging.¹⁷ In addition, constipation (a symptom typical of hypothyroidism), depression, and decrease in muscle mass leading to weakness are quite common. Muscle weakness due to hyperthyroidism may predispose older patients to fall and further injure themselves. The falling is frequently attributed to other illnesses before the correct diagnosis is made.

Because the consequences of hyperthyroidism in older people are general and are so similar to many other health problems, even hospital physicians often diagnose the condition incorrectly. In one study of hospitalized hyperthyroid patients, the diagnosis was suspected in only one-third of the patients.¹⁸ For those who require hospitalization, psychiatric diagnosis is the most common reason for admission, with debility and cardiac failure with atrial fibrillation also accounting for a large number of admissions.

The differences in symptoms are not only physical. The first adverse effect of hyperthyroidism in older people may be mental changes, which are frequently overlooked or attributed to aging. Instead of being overactive, hyperdynamic, and overwhelmed by anxiety and irritability or exhibiting mania, older people often experience withdrawal and depression. The effect of thyroid hormone excess on the minds of older people may be quite significant and manifests frequently as dementia, confusion, and apathy. They may even experience delirium. Increased nervousness, a symptom seen often in younger people, is not as common in older patients.

Older people often suffer from what doctors call “apathetic hyperthyroidism,” characterized by depression, apathy, and intellectual stupor. Patients with apathetic hyperthyroidism show exhaustion, a slowing of physical and mental activity, and an expressionless face. Because this appearance and change in personality are usually ascribed to aging, the disease frequently goes undiagnosed for a long time.

Hospitals’ use of certain X-ray procedures, such as cardiac catheterization and intravenous pyelogram, to visualize the heart, urinary tract, or other bodily organs may trigger hyperthyroidism from the iodine that is administered to provide sufficient contrast. An older person admitted to the hospital for evaluation of a cardiac or kidney condition may return home and display an altered state of mind or even delirium within a few days. Often the family is alarmed by the new, unexplained symptoms.

How an excess of thyroid hormone affects the brain depends on age and perhaps personality. Overactive thyroid has many faces. It may affect the mind in different ways. The end result is often a mixture of anxiety, emotional and behavioral changes, mood swings, anger, poor stress-coping mechanisms, impaired cognitive ability, inability to cope with job demands, and family problems. One patient described all these effects lumped together as “a monster inside me.” Fortunately, you have many options at your disposal to help you tame this monster.

Important Points to Remember

- If you have been experiencing weight loss, jitteriness, tremors, increased sweating, or palpitations, you could be suffering from an overactive

thyroid. But these are physical symptoms. While you are hyperthyroid, it is not unusual to become hypomanic and talkative and to feel as if you are on top of the world.

- Depression, waves of anger, anxiety, and lethargy could be symptoms of an overactive thyroid; mood swings and loss of touch with reality are also typical.
- If you are experiencing episodic panic attacks characterized by feeling out of control and a rapid heartbeat, you may have an overactive thyroid. Describe these symptoms in detail to your doctor.
- Although Graves' disease accounts for 70 percent of cases of hyperthyroidism, there are other causes, too, including transient hyperthyroidism due to temporary destruction of thyroid cells.
- As you get older, the symptoms of overactive thyroid are not necessarily the same as in younger people. With aging, an overactive thyroid tends to produce more depression, lethargy, muscle weakness, and heart symptoms.

THYROID IMBALANCE, DEPRESSION, ANXIETY, AND MOOD SWINGS

Your brain is unique. It creates your individual talents, perceptions, and moods. Yet its individuality presents some challenges to physicians and brain researchers when they try to figure out how the brain, body, and mind work together to generate specific mental states. For example, exact measurements or even precise definitions of what constitutes normal mental health continue to elude scientists. In the recent past, some doctors may have defined normal mental health merely as the absence of overt mental diseases such as manic-depression or schizophrenia. Today, most doctors have come to recognize that millions of people have various, more subtle forms of depression and anxiety.

More often than not, thyroid imbalance gives rise to mental and emotional symptoms of mild depression, intermittent rage disorder, mild attention deficit disorder, or other “minor syndromes”—conditions that cause suffering but are not pronounced enough to meet the psychiatric criteria of a mental condition. People with these conditions will find that their symptoms are magnified when a thyroid imbalance occurs. For a minority of patients, such magnified symptoms may cause them to slip into a more pronounced mental illness, but for most thyroid patients, the mental effects of thyroid disease—such as fatigue, low mood and mood swings, and lack of mental clarity—cause great suffering without being “psychiatric.”

Just as severe hypothyroidism is much less common than low-grade hypothyroidism, low-grade and borderline depression are much more common than easily diagnosed major depression.

Low-Grade Depression: Thyroid Shadow Syndrome

It is a common misconception that depression means mere sadness. The feeling of sadness is a normal response to the occurrence of a distressing event or to a disappointment in life. Although you may feel down and sad when depressed, sadness is not always a symptom of depression. In depression, a person's feelings are disconnected from all that surrounds that person, so that he or she may be neither sad nor happy. This disconnection causes a blunting of excitement about life in general. Although when someone is asked whether he or she is depressed, the typical response is, "No, I don't feel I'm depressed. I'm not sad," this person may in fact be suffering from the characteristic symptoms of depression.

An easy way to determine the likelihood that you may be suffering from depression is to complete the following questionnaire. If you answer a question with no, proceed to the next question; if you answer with yes, score the severity of your symptoms (1 = mild, 2 = moderate, 3 = severe) before proceeding to the next question.

Are you tired all the time?	Yes	No	_____
Have you lost interest in activities that you used to enjoy?	Yes	No	_____
Are you in a sad mood more or less constantly?	Yes	No	_____
Are you often irritable, and do you get angry over trivial matters?	Yes	No	_____
Do you experience crying spells?	Yes	No	_____
Do you have feelings of worthlessness?	Yes	No	_____
Do you often experience a sense of guilt about things or have you become too critical of yourself?	Yes	No	_____
Has your appetite increased, and/or have you gained weight?	Yes	No	_____
Has your appetite decreased, and/or have you lost weight?	Yes	No	_____
Do you have difficulty remembering things and/or concentrating on normal activities?	Yes	No	_____
Do you have trouble making decisions, or do you feel inefficient?	Yes	No	_____
Do you have trouble sleeping through the night?	Yes	No	_____
Do you sleep more than eight hours (either going to bed too early or sleeping late)?	Yes	No	_____

Do you wish you were dead?	Yes	No	_____
Have you become very sensitive to criticism or rejection?	Yes	No	_____
TOTAL SEVERITY SCORE			_____

If you answered yes to three or more of the preceding questions, you may be depressed; if you answered yes to five or more of the questions, you are probably depressed.

Now add the scores for each symptom to obtain your total severity score, the meaning of which is explained in the accompanying table. The total severity score will be useful later in assessing your response to treatment.

DEPRESSION/ANXIETY SEVERITY

Total Severity Score	Severity of Symptoms
15 or less	Mild
15-24	Moderate
25 or more	Severe

In addition to the feelings of disconnection and fatigue, the main symptoms of depression are changes in appetite, sleep disturbances, lack of interest in enjoyable activities, and problems with memory and concentration.

In general, as thyroid hormone begins to decrease, changes in a person's mental energy are barely recognizable. Gradually, subtle changes occur, and the person begins to slow down and often "loses steam" in the afternoon. The fatigue itself precipitates a growing concern that there might be something terribly wrong somewhere in the body. The lack of energy may result in a great deal of frustration, a sense of no longer being able to function as the person has done in the past. This, in turn, produces feelings of guilt, inadequacy, and lower self-esteem. Even if a hypothyroid person's symptoms do not fully satisfy the criteria for depression, he or she may be experiencing a low-grade depression (a chronic, even milder form of depression than dysthymia) that is manifested primarily as fatigue and lack of enthusiasm.

Dawn, an educational consultant who conducts seminars all over the United States, began to notice a lack of energy a year before she sought medical attention. She said:

I would hit three in the afternoon and be ready to go to bed. That was terribly frustrating, since previously I had had such a high energy level. I felt that people would think I was inadequate, that I was giving up, when it wasn't me who was giving up, it was my body. I waged a constant battle within myself to keep up with things at work and try to live a normal existence. I felt that I was dancing as fast as I could and going nowhere. At lunchtime and during afternoon breaks, I would find a quiet place and take a quick nap to try to recoup. I would eat a piece of chocolate to give me a boost, but nothing helped.

I diagnosed Dawn with a moderately underactive thyroid. Although, when I asked, she did mention several other symptoms of hypothyroidism, what was affecting Dawn the most was the deficiency in energy. She attributed almost every other symptom that she exhibited to her tiredness, yet Dawn was suffering from borderline depression as a result of her underactive thyroid. At times, she was experiencing unexplained anger, increased appetite, and cravings. She was also deeply affected when someone was critical of her and when she perceived that someone was rejecting her.

A thirty-nine-year-old surgeon's wife, Nina, repeatedly told her busy husband, "I am tired. I feel that there must be something wrong with my body." His reply was always the same: "You are trying to do too much with all these social activities. Just slow down."

Nina didn't think it was stress or too much activity. Rather, she was convinced that something was physically wrong with her. Her energy level was low. She was sleepier than she felt she should be, and she could not control her weight gain. In her words:

I wanted to go to sleep at seven in the evening. I was feeling down. I was not that type of person before. I could not concentrate, and I could not work. I had anxiety. Often, for no reason, when I was by myself, I would cry. Many times I was not happy even though I felt I had to be happy. I was forgetful, which would really upset me. I also had problems concentrating on things and became very bad with names. I didn't care to do much, and I withdrew.

I thought to myself, what could be wrong? I knew that weight problems were related to thyroid disorders, so I went to see an experienced endocrinologist. He said, "Don't worry. This is nothing. I don't want to put you on medication."

A year later, because her symptoms had persisted, Nina came to see me. After she told me about her suffering, she said, "I know a problem exists, and there has to be a reason." I asked Nina whether she had told the first endocrinologist about all the problems besides the tiredness. "I don't think so, because he didn't ask me. I was disappointed when he said the levels were borderline normal. I didn't believe it. That's why I thought I had to see somebody else."

Nina's blood test showed low-grade hypothyroidism. She was also suffering from a case of low-grade depression. I started Nina on thyroid hormone treatment, and she showed dramatic improvement. Her tiredness and the intermittent sadness and anger went away. Nina was suffering from a "shadow syndrome" caused by a minute deficit of thyroid hormone in her system and her brain. Getting on the medicine restored Nina's energy and made her other symptoms disappear. Slowly but surely, she saw her body starting to cooperate with her again instead of being her enemy.

Many people like Dawn and Nina suffer needlessly from low-grade hypothyroidism. Research conducted on women has shown that even those who have low-grade hypothyroidism *but no symptoms of mood disorder* show evidence of improvement in objective scores that test levels of depression, hysteria, and obsessive-compulsive behavior when they are treated with thyroid hormone.¹ This illustrates that even those who suffer from low-grade hypothyroidism may not necessarily sense the effect of the thyroid hormone deficit. They might be attributing the way they feel to just "being themselves."

Because the majority of patients with low-grade depression do not seek psychiatric help, establishing the frequency of hypothyroidism in people suffering from low-grade depression is a real challenge for researchers. I expect that a minor thyroid imbalance occurs in a significant percentage of people suffering from low-grade depression, however. In a recent study conducted in the German state of Bavaria, ultrasound exams showed an enlarged thyroid gland in 86 percent of patients suffering from chronic depression, but in only 25 percent of people not suffering from depression.²

Let's look at how even a minute thyroid hormone imbalance could be responsible for lowering mood.

Thyroid Hormone: Serotonin's Cousin

The explosive advances in the knowledge of brain chemistry and its effects on mood began in the early 1960s. In recent years, doctors have recognized that serotonin imbalance is an important factor in causing depression. Acceptance of the idea that most psychiatric conditions can be attributed to a chemical imbalance in the brain opened the door to drastic changes in the way doctors explain and treat mental disorders. This new era of biological psychiatry, or *biopsychiatry*, witnessed a convergence of psychiatry and medicine, fields previously separated by rigid boundaries. A psychiatric illness now tends to be viewed in much the same manner as a physical illness.

In the early days of biopsychiatry, neuroscientists believed that each mental disorder was associated with a corresponding brain chemical imbalance. This assumption led psychiatrists to hope that they could diagnose a

psychiatric condition by measuring the levels of specific bodily chemicals or their by-products in the blood or urine. But brain chemistry is not so simple. Most often, multiple imbalances of chemicals—such as serotonin, noradrenaline, and others, including those we are concerned with here, the thyroid hormones—are responsible for mental symptoms.

Scientists now consider thyroid hormone one of the major players in brain chemistry disorders. And as with any brain chemical disorder, until treated correctly, thyroid hormone imbalance has serious effects on the patient's emotions and behavior.

Once the important thyroid hormones, T3 and T4, are released into your bloodstream, they enter cells of organs and play an important role in regulating major functions in the body. Adequate amounts of thyroid hormone are also required throughout your life if your brain is to function normally. Most of your cognitive abilities—such as concentration, memory, and attention span—as well as mood and emotions depend on normal thyroid hormone levels. Mounting evidence suggests that T3, the most potent form of thyroid hormone, is a bona fide brain chemical. It is found in the junctions of nerve cells (synapses) that allow these cells to communicate with one another.³ This thyroid hormone also regulates the levels and actions of serotonin, noradrenaline, and GABA (gamma-aminobutyric acid), now accepted as the main chemical transmitters implicated in both depression and some anxiety disorders. Maintaining normal serotonin and noradrenaline levels in the brain depends to a great extent on whether the correct amount of T3 is available. Extensive animal and human research has led scientists to conclude that serotonin levels in the brain decrease if T3 is not delivered in the right amount.⁴ Also, a deficit of T3 in the brain is likely to result in noradrenaline's working inefficiently as a chemical transmitter,⁵ and noradrenaline deficiency or inefficiency is, in some people, the chemical reason for depression.⁶ Thyroid hormone also regulates cholecystokinin tetrapeptide (CCK-4) in the brain. A low level of this chemical caused by an underactive thyroid promotes inner tension, a quite common symptom of hypothyroidism.⁷

Findings that T3 is very highly concentrated near the junctions between brain cells strongly support the concept of T3 as a brain chemical transmitter that is essential for maintaining normal mood and behavior. This is the location where chemical transmitters such as noradrenaline are released to relay messages from one brain cell to another. The potent thyroid hormone T3 is found in greater quantities in the limbic system, a region of the brain that regulates mood, emotions, and perception of happy and sad events. The resemblance of thyroid hormone to other important brain chemicals is also striking: the amino acid tyrosine is an essential constituent both of thyroid hormone and of the brain chemicals noradrenaline and dopamine.

Beating the Blues

My wife and I once attended the symphony with a colleague, Jim, and his wife, Lorraine, whom I hadn't seen in several years. Upon being reintroduced to Lorraine, I was surprised to see that she now had a slightly enlarged thyroid gland, or goiter. Even though she used to be an avid devotee of the symphony, she was clearly not enjoying herself that evening. She had a hard time smiling and appeared isolated, disconnected from her friends, hardly paying attention to our conversations or the music. During the intermission, when my wife and Lorraine went off by themselves, I mentioned to Jim that I was surprised to see how much Lorraine had changed. I also suggested that she appeared to have thyroid disease.

Jim seemed relieved at the opportunity to talk to someone and confessed that his wife had completely changed three or four years earlier. She gained weight, was often very tired and sleepy, and became overly sensitive to criticism. Lorraine didn't seem to enjoy many things that used to bring her great pleasure, such as cooking and the symphony. Her relationships with Jim and their children were really suffering. She had undergone counseling for six or eight months, thinking her problems were psychological, but no real changes resulted. Several physicians said she was simply "stressed" and told her to learn to relax. A holistic doctor administered herbs, which, like everything else, did not seem to help. Obviously, these physicians had failed to pay attention to Lorraine's enlarged thyroid gland. Lorraine became pretty discouraged about going to doctors for help and seemed resigned to this as her new way of life.

A week later, Jim convinced Lorraine to try one more time. She came in to see me and tested positive for hypothyroidism. After three months of treatment, Lorraine dramatically improved. She started to enjoy life again and regained control over her weight. In retrospect, Lorraine was suffering from a case of hypothyroidism with symptoms of atypical depression that resolved with thyroid hormone treatment.

Atypical depression is a common form of chronic depression experienced by people with an underactive thyroid. Such patients can be cheered up temporarily by positive events, but the recovery tends to be brief. The patients often slip back into a depressive state a few hours or days later. The symptoms may be mild to severe. In this type of depression, the patients become sensitive to rejection and criticism and develop a tendency to overeat, especially carbohydrates, and to oversleep. Overeating and oversleeping are important characteristics of atypical depression. They help psychiatrists distinguish this quite common type of depression from major depression, which causes the person to suffer from insomnia and loss of appetite.⁸ Some patients with atypical depression experience anxiety attacks and severe lethargy,

which may impede their normal functioning. The depression and fatigue are frequently worse in the evening. The patients may appear introverted and gloomy.

People with atypical depression often remain undiagnosed because their suffering rarely reaches the severity of major depression and is easier to hide. They may not consider themselves depressed; at times they may not realize that anything is wrong with them; and suicidal thoughts are unusual.

Hypothyroidism can also cause the person to suffer from dysthymic depression, or “chronic blues,” another common form of chronic depression. It is perhaps also the most common type of depression experienced by people with normal thyroid function. It affects at least 6 percent of the general population during their lifetimes. Patients afflicted with dysthymia are depressed more often than not. They feel down but are able to function. People with this form of chronic depression also tend to oversleep; their appetite may be either increased or decreased, however. They frequently become used to the way they feel and may not even recognize that they have a problem. Dysthymic people do not go through well-defined periods of depression but remain more or less depressed constantly: it is a lingering type of depression.

The accepted diagnostic criterion for dysthymia requires that at least two symptoms—change in appetite, insomnia, fatigue, low self-esteem, poor concentration, indecision, and feelings of hopelessness—in conjunction with depressed mood be present for most of the time over at least two years.⁹ Although two years of suffering may be acceptable as a psychiatric criterion, that doesn’t mean you should suffer unnecessarily for two years before being diagnosed and treated. This is especially true if the cause of your depression is a thyroid imbalance.

As you can see, atypical depression and dysthymia share many features. They are chronic, lingering forms of depression that do not lead to suicidal thoughts. The fatigue in atypical depression, however, is in general much more severe. Further, although overeating is characteristic of atypical depression, loss of appetite can be seen in many patients suffering from dysthymia.

Erica, a forty-year-old teacher, suffered from dysthymia along with other physical symptoms of hypothyroidism for two years. She said:

I became so tired. I would lie down and sleep for hours just to get my energy back. I would take naps in the afternoon after school. I would go to bed early. It was like a stress relief. I loved to sleep. I never got enough.

I wasn’t suicidal, but I was very depressed. I took one day at a time. I didn’t talk to anyone. I kept to myself. I rarely visited family. When I came home from work, I immediately went to sleep. I lost my appetite and kept losing weight. I worried about paying bills. I always had to write things down or I would forget.

I wondered where my life was going. I was afraid of the future. Urged by my sister, I began to see a psychologist, but this was not helping.

One day, Erica saw her general practitioner for a sore throat. The doctor noticed a goiter and suspected hypothyroidism. Erica tested positive for hypothyroidism, and her depression completely resolved with thyroid hormone treatment. A few months later, Erica said, "Thyroid treatment has helped me cope with the depression and stress. I am more alert. I am not as depressed. I am able to really talk to my therapist frankly and follow her suggestions."

Erica's dysthymia was in large part caused by an underactive thyroid. People with thyroid imbalance who suffer from dysthymia often continue to try to function despite their tiredness and other symptoms and attribute the tiredness to stress, work, or too many activities. Gradually, they feel overwhelmed and start perceiving that what they are doing is more than they can handle. Yet this can be corrected, and they can feel like their old selves again if treated promptly and properly. The key is to think thyroid and to have your doctor order the appropriate thyroid test.

Major Depression and Thyroid Imbalance

Hypothyroidism also makes patients at a higher risk for slipping into major depression—the most extreme and most dreaded form of depression. Recent research has shown that patients admitted to the hospital with hypothyroidism have a much greater risk of readmission with depression.¹⁰ A minimal thyroid imbalance is enough to trigger a vicious cycle that ultimately leads to major depression. When hypothyroidism is not immediately addressed and lingers untreated for years, minor depression can evolve into major depression, which can lead to a severe feeling of disconnection and even suicidal thoughts. In such patients, the extreme tiredness associated with hypothyroidism and depression is part of a never-ending vicious cycle that drains them and ultimately leads to deeper depression.

Christina, a thirty-four-year-old receptionist, suffered from gradually worsening depression. She described her two years of suffering before doctors diagnosed her with hypothyroidism: "I would come home from work really, really tired. I didn't want to do anything. I had no motivation to go out and spend time with my friends. It was a struggle to work around the yard and to do all the daily chores like cooking and taxiing kids. For the past two years, I have gone to bed by nine or nine-thirty. It is a joke in my family that the kids stay up later than I do."

As the months passed, Christina felt as if she had become disconnected

from the world and was no longer able to sleep. She quit her job and one day tried to kill herself by taking an overdose of painkillers. "I just wanted to escape and die," she said.

Before she became severely depressed, Christina had been in a state of minor, lingering depression. Because doctors failed to diagnose and treat her hypothyroidism, however, she progressed from minor depression to full-blown major depression. Her struggle with the extreme tiredness was a signal that more serious depression was evolving.

In major depression, a patient becomes quite disconnected from his or her surroundings and meets whatever happens with extreme indifference. The feelings of disconnection and tiredness are worse in the morning. The person typically suffers from insomnia and may wake up several hours early and have difficulty falling back to sleep. Other characteristics are loss of appetite, disinterest in eating, weight loss, and difficulty concentrating. People suffering from major depression often have the feeling that life is not worth living. They blame themselves and feel that they do not deserve help. Often they begin to think about death and suicide. Major depression can occur unexpectedly at any age and gradually worsens over a period of months. In some cases, the patient may be out of touch with reality and have hallucinations (major depression with psychotic features).

Researchers who screened severely depressed patients for thyroid disease found that up to 15 percent of them have an underactive thyroid.¹¹ But the striking finding was that their underactive thyroid was often low-grade rather than severe.

A study also demonstrated that nearly 20 percent of patients hospitalized because of severe depression had Hashimoto's thyroiditis.¹² The fact that a significant number of people, particularly women, being treated for major depression have low-grade hypothyroidism is best explained by the fact that a minor deficiency of thyroid hormone in the brain makes the person more vulnerable to slipping into major depression. In fact, women with low-grade hypothyroidism who are not currently suffering from major depression often experienced one or more episodes of depression in the preceding years.

In one study that compared the psychiatric history of sixteen women who had low-grade hypothyroidism to the psychiatric history of fifteen women with normal thyroid function, none of the women in either group was suffering from major depression at the time of the study.¹³ The researchers found, however, that 56 percent of the women with low-grade hypothyroidism had a major depression episode at least once in their lives, compared to only 20 percent in the group with normal thyroid function. The study also showed that most episodes of depression had occurred in the preceding five years in the patients with low-grade hypothyroidism. This illustrates that low-grade hypothyroidism may make a woman more vulnerable to major depres-

sion when stresses occur in her life. Correcting low-grade hypothyroidism in such women should be viewed as a way to prevent the occurrence of major depression.

Scientists have been intrigued for years by the fact that a tiny thyroid hormone deficit in the brain (such as results from a minimally failing thyroid gland) can precipitate major depression. Stress, depressing events, and threats to livelihood are perceived and integrated in the brain, and messages are immediately transmitted to the thyroid gland so that the gland can adjust its function and increase the production of thyroid hormone.¹⁴ The increased production of thyroid hormone triggered by these threatening events will help maintain an adequate brain chemistry that allows you to deal better with the stress, depressing event, or threat to your livelihood.

Even in low-grade depression, serotonin levels in the brain tend to decrease. The brain transmits the decrease in serotonin levels, however, to the pituitary. The message prompts the pituitary to produce more TSH, so the thyroid gland manufactures and releases more thyroid hormone. This thyroid adjustment works to bring serotonin levels back to normal so that mood does not deteriorate further. Thyroid hormone in the brain has the ability to enhance the production of serotonin in brain cells (see the accompanying diagram illustrating the role of thyroid hormones in preventing depression). But if the thyroid is failing and is unable to rescue brain chemistry or provide the extra thyroid hormone needed, serotonin levels will continue to fall, and depression escalates. This explains how a dysfunctioning gland could deprive a person of a primary defense mechanism against major depression. The increased vulnerability to major depression in patients with a previous history

**THE ROLE OF THYROID HORMONES
IN THE PREVENTION OF DEPRESSION**

Brain	Low serotonin ↓ (+)	Increased serotonin ↑
Hypothalamus	TRH	
	↓ (+)	
Pituitary gland	TSH	(+)
	↓ (+)	
Thyroid gland	Thyroid hormones	

of major depression was elegantly illustrated in a study that assessed the severity of mood disturbances occurring in people who became hypothyroid after the surgical removal of their thyroid gland. The study showed that patients who previously suffered from major depression had the most severe symptoms when they became hypothyroid.¹⁵

Consider the case of Sara, age twenty-nine. She had been engaged for six months, was extremely happy and excited, and had just begun preparing for her wedding. She was a sales manager in a big department store, and the demands of her job were overwhelming because the Christmas season was approaching. She began feeling tired in the afternoon. When she went home, all she wanted to do was to sit down, watch TV, and then go to bed.

Sara also began to lose interest in going out with her fiancé. As the stress of preparing for the wedding and the demands of her job increased, she became easily irritated, had crying spells, and became angry about trivial matters. Gradually, the relationship deteriorated, and ultimately, the wedding was canceled. Sara did not share any of her feelings with anyone at that point. She attributed all of this to stress, the demands of her job, and her inability to cope with all these things at the same time.

Over a few weeks, Sara slipped into a state of major depression. When her sister came for a visit at Christmas, she insisted that Sara see a psychiatrist. Sara agreed, partly because she had experienced severe depression four years previously and had a strong family history of depression.

Sara tried several antidepressants, but none of them seemed to work. Unable to function any longer, she stopped eating, lost a lot of weight, and was nearly fired from her job.

"I had problems with memory," she said. "I could not remember orders or where I placed papers. I would not return phone calls to customers." This made Sara feel even worse, and she started having suicidal thoughts. When finally another psychiatrist tested her thyroid, she was found to have low-grade hypothyroidism. As a result of thyroid hormone treatment added to the antidepressant, her memory improved, and she began eating again. Her original perky, happy personality reemerged. Her energy level increased, her performance at work improved, and her moodiness and anger disappeared.

In Sara's case, the job- or wedding-related stress and the genetic predisposition toward depression could have been what originally triggered the depression. But hypothyroidism made her more vulnerable to slipping into a state of major depression. When her brain needed a little extra T3 to prevent serotonin from falling further during the stress of the approaching Christmas season and her wedding, her thyroid gland was unable to do its

job, and a complex sequence of brain chemistry imbalance led to major depression.

Diagnosing and treating a thyroid hormone imbalance may help prevent you from slipping into major depression. But if you are already suffering from depression, as in Sara's case, you must have your thyroid hormone imbalance diagnosed and treated. If the thyroid imbalance is not corrected, the depression will not be helped by conventional antidepressants. Research has shown that 52 percent of patients who suffer from major depression and do not respond to antidepressants have hypothyroidism.¹⁶ Once doctors add thyroid hormone treatment to the antidepressant, the depression often resolves. Hypothyroidism also accounts for nonresponse to antidepressants in a significant percentage of people suffering from chronic minor depression. If you are suffering from depression or have recently experienced depression, you should be tested for a thyroid imbalance.

Clearing the Depression

If you are suffering from depression and test positive for hypothyroidism, in general you can expect the depression to clear once you correct the thyroid imbalance. The depression, in some cases, may not fully respond to thyroid hormone treatment alone. The depression may have taken on a life of its own and require additional treatment, particularly if the underactive thyroid had been undiagnosed for a long time.

Generally speaking, if you have a dysthymia, an atypical depression, or a low-grade lingering type of depression and your doctor diagnoses an underactive thyroid, your doctor should treat the underactive thyroid first for at least three months. If the depression does not fully resolve despite adequate thyroid hormone treatment, your doctor will add an antidepressant, such as a selective serotonin reuptake inhibitor (SSRI), for six to twelve months. Another option will be to use the combination T4/T3 treatment (discussed in Chapter 18). However, if you have major depression and hypothyroidism, you must immediately begin treatment with both thyroid hormone and an antidepressant. If you are still suffering from symptoms of depression after three months of treatment with thyroid hormone and an antidepressant, the T4/T3 combination treatment may be the solution.

After your thyroid is well regulated and the depression has fully resolved, your doctor will probably consider stopping the conventional antidepressant after twelve months. If, despite normal thyroid levels, depression recurs after you stop the antidepressant, then antidepressant treatment should be resumed. (See Chapter 17 for information on antidepressants.)

Anxiety Disorders and Thyroid Imbalance

As is the case with depression, anxiety disorders can be triggered or worsened by a thyroid imbalance. According to a survey by the National Institute of Mental Health, 10 percent of the adult American population suffered from an anxiety disorder in the preceding six months.¹⁷ It is estimated that 27 percent of adults suffer from an anxiety disorder during their lifetime. At any one time, nearly 15 million Americans suffer from an anxiety disorder. Undoubtedly, thyroid imbalance accounts for some of this anguish. One study even demonstrated that thyroid disorders are very common among family members of patients suffering from an anxiety disorder.¹⁸ Also, in some people anxiety seems to predispose them to the occurrence of an overactive thyroid.¹⁹

Two types of anxiety disorders often occur as a result of a thyroid imbalance:

1. Generalized anxiety disorder, defined as excessive, exaggerated, and unrealistic worrying about trivial matters for at least six months
2. Panic disorders, characterized by attacks of abnormal physiological responses accompanied by extreme fear, causing physical symptoms

Less common anxiety disorders that have been noted to occur as a result of thyroid imbalance include:

- Social phobias
- Specific phobias
- Obsessive-compulsive disorder
- Post-traumatic stress syndrome (see Chapter 2)

In addition to excessive and unrealistic worrying, the most typical symptoms of a generalized anxiety disorder are restlessness, feeling superalert and on edge, fatigue, difficulty concentrating (which may be expressed in extreme cases as an inability to think or process information), irritability, muscle tension, and difficulty falling or staying asleep.

As is the case with depression, the severity of anxiety disorders varies. Many people with mild generalized anxiety disorders become used to the way they feel: the mental and emotional struggles can become a way of life, and they may not even suspect that something is wrong. Other people, in contrast, are overwhelmed by the symptoms. Many seek medical help and may go from physician to physician trying to find a reason for their suffering.

Although, as noted earlier, it is commonly assumed that anxiety accompanies an overactive thyroid and depression accompanies an underactive thy-

roid, in fact, hypothyroidism frequently causes significant anxiety and even panic attacks. Abnormal noradrenaline levels in the brain may be the basis not only for depression but also for anxiety disorders such as panic attacks. A decrease in serotonin and an increase in noradrenaline activity in certain parts of the brain, coupled with an increase in the activity or the sensitivity of the body's respiratory center, cause the mental and physical symptoms of panic disorders.²⁰ Noradrenaline firing in the midbrain is the main reason for the physical effects on the heart and respiratory system experienced during a panic attack. The physiological responses accompanying a panic attack are real and are generated by the autonomic nervous system. An overactive thyroid causes noradrenaline activity to increase, which results in symptoms of anxiety and panic attacks. An underactive thyroid is likely to cause the levels of GABA, an antianxiety brain chemical, to decrease. This also contributes to the occurrence of anxiety during hypothyroidism-caused depression.

Panic Attacks

As explained in Chapter 1, the physical symptoms of a thyroid imbalance are similar to those resulting from an anxiety attack. Thus, a physician evaluating a patient with a thyroid disorder may believe that what the patient is experiencing results from an anxiety disorder rather than a thyroid imbalance.

Among the most common symptoms of a panic attack are:

- Pounding heart
- Accelerated heart rate
- Sweating
- Trembling or shaking
- Sensation of shortness of breath
- Feeling of choking
- Chest pain or discomfort
- Nausea
- Feeling of dizziness, light-headedness, unsteadiness, or faintness
- Feeling of unreality or feeling disconnected from oneself
- Fear of losing control
- Fear of dying
- Numbness or tingling sensation
- Chills or hot flashes

When patients experience their first panic attack, they often go to a hospital emergency room. Because the rapid heartbeat, difficulty breathing, dizziness, and other symptoms may resemble a heart attack or other heart problem, people suffering from panic attacks, including those with a thyroid

imbalance, may undergo repeated and costly cardiac and neurological evaluations. Whether a person needs to have more than one panic attack to fulfill the criteria for a panic disorder is debatable. A person who has had only one panic attack will fear having another one. It has been estimated that nearly 30 percent of the American population experience at least one panic attack in their lifetime.²¹

Too often, doctors imply that a patient's symptoms are not real or are "in your head." For someone who has just experienced a rapidly beating heart, tingling in the hands and feet, and dizziness or nausea, this is not helpful.

When panic attacks recur, people enter a vicious cycle of anticipatory anxiety—excessive worrying about when the next attack will occur. They may also become afraid to be in a place or situation from which they cannot exit quickly because of the fear that a medical catastrophe or death might happen at any time. The vicious cycle of attacks and fear of attacks becomes debilitating and leads sufferers to see physician after physician, specialist after specialist. They continue to receive the same answer: "There's nothing physically wrong with you!"—which further perplexes the patients, who know their symptoms are real.

An easy way to determine the likelihood that you may be suffering from an anxiety disorder is to complete the following questionnaire. If you answer a question with no, proceed to the next question; if you answer with yes, score the severity of your symptoms (1 = mild, 2 = moderate, 3 = severe) before proceeding to the next question.

Have you intermittently been having difficulty breathing calmly?	Yes	No	_____
Do you experience feelings that something bad is going to happen?	Yes	No	_____
Do you feel tense all the time?	Yes	No	_____
Do you feel at times as if your arms and legs shake for no obvious reason?	Yes	No	_____
Do you often feel restless and unable to sit still?	Yes	No	_____
Have you had trouble falling asleep, or have you been waking up restless in the middle of the night?	Yes	No	_____
Have you been worrying excessively over trivial matters?	Yes	No	_____
Do you often feel as if you have to do things right now?	Yes	No	_____
Have you been experiencing spells of pounding heart, rapid heartbeat, and sweating?	Yes	No	_____

Have you been experiencing spells of shakiness, shortness of breath, and feelings of choking?	Yes	No	_____
Have you been experiencing spells of chest pain, nausea, light-headedness, and unsteadiness?	Yes	No	_____
Have you been experiencing spells when the world feels unreal?	Yes	No	_____
Have you been excessively afraid of dying?	Yes	No	_____
Have you been getting unexplained numbness, tingling, chills, or hot flashes?	Yes	No	_____
TOTAL SEVERITY SCORE			_____

If you answered yes to three or more of the preceding questions, you may be suffering from an anxiety disorder. If you answered yes to five or more of the questions, you are probably suffering from an anxiety disorder.

Now add the scores for each symptom to obtain your total severity score, the meaning of which was explained earlier in the chapter, in the "Depression/Anxiety Severity" table. The total severity score will be useful later in assessing your response to treatment.

Mood Swing Disorders and Thyroid Imbalance

From birth, all human beings have mood swings that occur during the day as well as over periods of weeks and months. These swings, however, are confined to a normal range, and we adjust to them. In the normal upswing, trivial news or events may make you unusually happy. If the same events or news occurred in the normal downswing, you would experience much less happiness. Similarly, bad news or a minimal disenchantment could make you very sad if it happened during the normal downswing but might not have much effect during the normal upswing. These are healthy mood swings.

With mood, as with most biological variables, there is a gray zone between normal and abnormal. Biopsychiatrists see abnormal mood swings as being due to defects in regulatory biochemical mechanisms that normally maintain mood swings within an acceptable range. The confinement of mood within what is considered to be a normal range is tightly regulated by several brain chemicals, including serotonin and noradrenaline. If, however, you suffer from clear-cut symptoms of depression in the downswings and symptoms of hypomania or mania in the upswings (even if the symptoms are mild), you will be considered as suffering from a mood swing disorder.

In many people with minor forms of mood swings, the symptoms are not disturbing enough to be noticed. Family members and friends may regard such people as being somewhat different, sensitive, or emotional, or as having an “unstable personality.”

Because the severity of mood swings varies from one person to another, often only severely disturbing up- or downswings are noticed and lead to a psychiatric evaluation. Based on the rigid criteria used by psychiatrists, a bipolar disorder in its severe form (bipolar depression) affects nearly 1 percent of the population. Minor forms of mood swings, however, affect 5 to 8 percent of us and either remain undiagnosed for a long time or are not properly diagnosed.²² Bipolar disorder is actually often mistaken for a straightforward case of depression. The reason is that manic-depressive patients often suffer primarily from recurrent depressive episodes.²³ Some patients experience very few intermittent manic or hypomanic episodes. The misdiagnosis is more common in women, notably because they tend to have more depressive symptoms but also because their upswing is often in the form of hypomania.

When manic-depressive people go through the mild upswing of hypomania, they are charming and successful in business or any other undertaking. They appear to be very organized, efficient, and able to achieve more than normal people. Hypomanic people have much more energy than usual and are very creative. They may exhibit impulsive behaviors, consume unusual amounts of alcohol (dipsomania), and engage in impulsive buying and excessive gambling. In fact, all this is typically overlooked and the family notices that there is something wrong with them only during the depressive period. When depressed, they tend to become lethargic and sleep all the time.

This explains why many patients diagnosed with “depression,” even in a mild form, actually suffer from an undiagnosed bipolar disorder and are not properly treated. When such patients are prescribed an antidepressant such as an SSRI, they may flip into mania.²⁴

Stress has a major effect on your symptoms and on whether you experience elation or depression. Unhappy life events in life will tend to trigger depression, while trying hard to reach a specific goal often triggers elation or even a manic episode. Manic-depression can be rapid-cycling, in which the swings may last hours or days, or it may follow the typical bipolar disorder pattern of no more than three or four cycles per year.

In many patients with a typical bipolar disorder, periods of abnormal mood are separated by periods of normal mood lasting months or years. Mood swing disorders often begin earlier in life (typically in the early twenties) than major depression. If you have been diagnosed with “depression,” your physician should reconsider the diagnosis if your first episode of depres-

sion occurred at an early age (adolescence or early adulthood), if you have a family history of bipolar disorder, or if you had an episode of mania in the past.

Bipolar patients frequently suffer from a coexisting anxiety disorder. Research has shown that patients with generalized anxiety syndrome have an increased genetic predisposition to suffer from a bipolar disorder. One study reported that 24 percent of patients with bipolar disorder experience an anxiety disorder, and 16 percent of them have a panic disorder.²⁵ Anxiety can make bipolar disorder worse and makes the mood swings more frequent. In many, anxiety precedes the beginning of the bipolar condition and can also contribute to misdiagnosis.

A balance of thyroid hormone in the brain is crucial for maintaining mood stability. If you suffer from a deficit or an excess of thyroid hormone resulting from a dysfunctional gland, you may even experience clear-cut mood swing disorder. Severe hypothyroidism has even been blamed for causing manic-depression, with poor judgment and hallucinations. Doctors always wonder, however, whether such patients might not have preexisting minor forms of manic-depression, which have become more severe as a result of the thyroid imbalance.

Hyperthyroidism can also cause mood swings in a person who does not have a preexisting mood disorder. In some people, an overactive thyroid can result in an elated mood called "hypomania" or "mania," depending on whether the elation is moderate (hypomania involves no major behavioral disturbances) or severe (mania is associated with irrational behavior). In some patients, the thyroid condition may not be diagnosed until several years after the onset of the mood swing disorder that it caused.

By and large, if you are suffering from manic-depression, you have a much higher chance of having a thyroid disorder. Psychiatrists have recognized for quite a few years that hypothyroidism is much more common in patients with manic-depression than in the general population.²⁶ Although the reason for this higher frequency is not entirely clear, one factor is that patients suffering from manic-depression are often treated with the chemical element lithium. One of the first substances recognized as a mood stabilizer, lithium has since been shown to decrease thyroid activity. Hypothyroidism is ten times more common in bipolar patients treated with lithium than in patients not receiving lithium. Recent research, in fact, has shown that 30 percent of bipolar patients treated with lithium have an underactive thyroid, compared to 6 to 11 percent of patients not receiving lithium.²⁷

One study conducted on a large number of psychiatric patients in the Netherlands showed a clear association between rapid-cycling bipolar (mood swing) disorder and autoimmune thyroid disease.²⁸ Women seem

predisposed to mood swing disorders and depression when they suffer from an immune attack on the thyroid even when they are not treated with lithium. Is the immune system in these patients producing substances that affect the limbic system and alter mood and emotions, or do some thyroid antibodies cross the blood-brain barrier and affect the limbic system? Perhaps it is not only the thyroid imbalance but immune factors as well that contribute to the manic-depression.

Doctors diagnose many patients with mood swing disorders only when the thyroid condition is recognized because of how the superimposed thyroid imbalance affects mood swings. Low thyroid promotes a longer duration of the bipolar disorder, causes more frequent mood changes, and makes manic episodes more severe. Psychiatrists and thyroid specialists who fail to consider these effects may find it difficult to obtain optimal results treating their patients.

The most common reshaping of a mood swing disorder resulting from hypothyroidism is the precipitation of severe depression and the blunting of the upswings. When hypothyroidism is superimposed on top of a mood swing disorder, the person's depression may be more pronounced and he or she may simultaneously lose touch with reality. This is frequently the point at which the individual or his or her family seeks help from a psychiatrist.

Thyroid imbalances have another important effect on the kind of mood swings a patient has. Approximately 10 to 15 percent of persons suffering from manic-depression have rapid cycling, in which episodes of depression alternating with mania occur rather frequently—more than four cycles per year. Patients whose manic-depression involves infrequent swings may change to a rapid-cycling pattern when they become hypothyroid. Although mood swing disorders occur about equally often in men and women, rapid cycling is more common in women. This is related to some extent to the coexistence of hypothyroidism. In fact, about half of the patients with rapid cycling who fail to respond to conventional treatment for bipolar disorder are hypothyroid. Some patients with mild mood swing disorders, in whom the elation and the depression are not drastic enough to be noticed when their thyroid function is normal, become more manic-depressive (having a clear-cut bipolar disorder) when they have a severe thyroid imbalance.

BEWARE OF TEENAGE BEHAVIOR

Frequently, manic-depression starts at a young age, as do Hashimoto's thyroiditis and hypothyroidism. A teenager who begins to show mood instability leading to behavioral changes may frequently be thought to have "age-related issues" or be suspected of having drug problems. Leslie, the daughter

of a woman afflicted with manic-depression and hypothyroidism, exhibited drastic changes in behavior. Her mother explained:

When everything started showing up, it showed up as attitude problems. Until it got severe, being twelve, starting her periods, and going into the teenage years were the ways it was explained. A teenager with manic-depression may be sleeping a lot, but so do many teenagers. She was being a problem in school. The teachers sent notes that she was having outbursts and that this was totally out of character.

It was like an alien had entered her body. She cried every day. She started doing irrational things that she would never have done in the past. She took acid. I could see her—if it continued—reaching suicide before she reached health.

With thyroid hormone treatment and lithium, Leslie experienced a major improvement in her energy level, attitude, and concentration. Her mood stabilized. Since then, her mother made sure she took the thyroid medication every day, and she became compulsive about testing Leslie's thyroid quite often (maybe too often), fearing that a thyroid imbalance would trigger the rapid cycling again.

THYROID IMBALANCE AND THE MILD MOOD SWINGS OF CYCLOTHYMIA

Cyclothymia, a long-standing condition characterized by periods of mild depression alternating with periods of slightly elated mood, often begins in late adolescence. The change in mood may be quite rapid, involving a shift from an upswing to a downswing every few days. At times, one type of mood lasts longer than the other. Frequently, the more noticeable swings are the downswings, which may be described by some as intermittently depressive moods. If you are suffering from cyclothymia, an underactive thyroid may make you experience a blunting of the upswings that results in chronic low-grade depression. Or it may make you shift continually from a happy mood to a depressed one.

An overactive thyroid could also make the swings in mood more apparent and more severe. Even if you have never suffered from cyclothymia, thyroid imbalance can cause patterns of mood swings similar to those of cyclothymia.

Evelyn, age thirty-seven, had been diagnosed with hypothyroidism fifteen years previously. She had been doing well on a stable dose of thyroid hormone and never had mood problems in the past. Then, two years ago, her general practitioner inadvertently reduced her thyroid hormone dose by half. As a result, she became hypothyroid. She also began experiencing noticeable mood swings, similar to the pattern of cyclothymia. As Evelyn described it:

For three or four days, I could make decisions quickly. The self-confidence was there. I didn't let anybody else tell me I couldn't do something. I felt like I was on top of the world. I'd do various creative projects and activities.

Three days of that, then I didn't want to do anything. I'd find it very difficult to come up with an idea for what to make for dinner. When I played bridge, I couldn't concentrate and my play would slip.

Three months after Evelyn's thyroid treatment was adjusted, her mood swings went away.

For most patients with mood swing disorders, treatments to stabilize mood do not work well when the brain is not receiving normal levels of thyroid hormones. Therefore, a mood swing patient who is also hypothyroid may be more difficult to treat. This may be due to depression causing the patient to neglect to take his or her medications. Family members of mood swing patients ought to make sure that thyroid medications are taken regularly to avoid difficult cycles. During depression, alcohol abuse may add to the pattern of self-neglect. To make matters worse, alcohol has a greater effect on a hypothyroid brain.

An End to Needless Suffering

In this chapter, we've seen how new discoveries are helping us understand thyroid disease better—especially how thyroid hormone balance affects the brain. As a result of these advances, endocrinologists and neuroscientists are focusing more on thyroid hormone because it is such an important component of brain chemistry. Unfortunately, because thyroid imbalances can go unrecognized, people experiencing psychiatric problems may not be receiving the appropriate treatment.

Physicians stand on the verge of a breakthrough to a more complete understanding of the processes that thyroid hormones set in motion. Psychopharmacology and endocrinology are drawing closer together as disciplines, and nowhere is this more important than in the treatment of the thyroid, our annex to the brain. Thyroid hormone may even be the serotonin of the new millennium.

Important Points to Remember

- The mental and emotional consequences of a thyroid imbalance may include serious conditions such as manic-depression. More often than not, however, the symptoms are more subtle and typical of borderline or shadow syndromes, such as mild depression.

- A thyroid imbalance, in turn, magnifies the symptoms of people with mild mood disorders and emotional problems.
- Even if a hypothyroid person's symptoms do not satisfy the full criteria for depression, he or she may be experiencing borderline depression that is manifested primarily as fatigue.
- Women who have low-grade hypothyroidism, even without obvious symptoms of depression, may achieve mood benefits from taking thyroid hormone.
- Scientists now recognize thyroid hormone as a major brain biochemical that, like serotonin, has prominent effects on moods, emotions, and behavior.
- If you are suffering from depression or have had depression in the recent past, you should be tested for a thyroid imbalance, especially if you are currently experiencing other symptoms of thyroid imbalance.

6

MEDICINE FROM THE BODY

Thyroid Hormone as an Antidepressant

Biopsychiatrists often say that the first drugs shown to alleviate depression by altering brain chemistry were lithium and imipramine, the first tricyclic antidepressant. (Developed in the mid-1950s, tricyclics were hailed for being able to “normalize” mood without causing euphoria.) In a way, however, thyroid hormone pills are one of the oldest medications known to treat depression.

In 1890, Spanish doctors implanted a sheep’s thyroid gland beneath the skin of a thirty-six-year-old woman suffering from severe hypothyroidism. They noted an immediate improvement in her symptoms and appearance. This experiment inspired Dr. George Murray to extract a fluid from sheep thyroid glands the following year. He achieved spectacular results by injecting this fluid into a severely hypothyroid patient.¹

The discovery that extracts of animal thyroid could reverse the physical and mental effects of an underactive thyroid was the first major breakthrough in the history of thyroid disease. Patients who had been institutionalized due to extreme symptoms, such as a form of madness from severe hypothyroidism, regained their sanity when they took extracts. Suddenly, underactive thyroid—once a fatal condition—became controllable, allowing afflicted people to lead normal lives.

Subsequently, the production of desiccated (dried) extract of thyroid in the form of tablets provided a more standardized form of thyroid hormone replacement for hypothyroid patients. Desiccated thyroid, commercialized as Armour thyroid, is obtained from animal thyroids. It contains both thyroxine (T4) and its by-product triiodothyronine (T3). Until the early 1970s, Armour thyroid was the most widely used thyroid hormone pill.

Even though doctors continue to prescribe the natural Armour thyroid

(primarily because it contains the two principal forms of the hormone), most doctors now prefer to treat an underactive thyroid with a synthetic form of T4 (thyroxine).² This form of the hormone stays active longer in the body, which converts a portion of T4 into the more potent T3. Although synthetic T3 became available in the 1950s, doctors did not find it useful in treating hypothyroidism because T3 caused blood levels of thyroid hormone to fluctuate too much, and it was active in the system for a much shorter period than the synthetic thyroxine pills.

Over the years, however, many psychiatrists have used T3 in conjunction with conventional antidepressants to treat patients with major depression who failed to respond well to the antidepressants alone.³ Even depressed patients treated with electroshock therapy benefit from taking T3. When given T3, these patients need fewer electroshock sessions, thus helping to avoid the cognitive impairment that may result from this treatment.

Norma was among the first of my patients to find in T3 the solution for depression. A forty-five-year-old lawyer, Norma is divorced and shares custody of two adolescent boys. According to Norma, when she first became ill, her boys were the only reason she got out of bed at all. Norma had changed from an expansive, high-energy woman with a vibrant intellect into a listless and somewhat desperate person. Three years before I met her, Norma had gone into severe clinical depression with no apparent precipitating incident. Although her psychiatrist had treated her with conventional antidepressants, she was still exhausted and suffering from mental anguish.

Norma's relentless search for a way to get back to normal led her to insist that she be tested for a thyroid imbalance. Norma was convinced that her thyroid was the key to her illness. A well-read woman, she was familiar with the similarities between a thyroid imbalance and the symptoms of fatigue and lack of joy that plagued her. But thyroid hormone testing showed that her thyroid gland was in working order and was not at the root of her persistent symptoms.

Despite the fact that Norma's blood tests were normal, I prescribed synthetic T3 (Cytomel) in addition to Prozac, which she had been taking for the past six months. For the first time in three years, Norma regained her former sense of self. The helpless feelings, exhaustion, and sense of isolation resolved.

There was nothing wrong with Norma's endocrine system. Her symptoms were due to a mix-up in her brain's use of such biochemicals as serotonin, noradrenaline, and also thyroid hormone. Although Norma's thyroid was fine, the mechanism that distributes the hormone through her brain and transports it to where it is needed was deficient. That's why she required chemical assistance with thyroid medication.

Thyroid Hormone's Role in ADHD and Depression

Thyroxine (T4), the main thyroid hormone produced by the thyroid, is a small molecule that contains four iodine atoms. In the cells of many organs (including the brain), a well-regulated process causes thyroxine to lose iodine, generating the much more potent thyroid hormone T3. In the brain, probably more so than in any other organ, T3 rather than T4 appears to be the critical form of the hormone that regulates cell functions. Because the amount of T3 present in the brain must remain in an optimal range to keep the mind functioning properly, fluctuations in the crucial process of converting T4 to T3 will inevitably affect the mind.

The thyroid system is one of the body's most tightly and precisely regulated systems. Minute changes in the way thyroid hormone is delivered to or dispersed in the brain can have drastic effects on mood, emotions, attention, and thinking. A problem with the delivery of T3 can cause disorders ranging from depression to attention deficit in people with normally functioning thyroids. Neuroscientists are teaching us the wide range of ways in which T3 regulates brain function and the brain chemistry syndromes that are likely to result from the alteration of thyroid hormone levels in the brains of people with normally functioning thyroid glands.

For instance, researchers recently discovered a connection between addiction to alcohol and thyroid imbalance in the brain. Free University of Berlin researcher Andreas Baumgartner conducted an experiment involving rats and alcohol.⁴ He found that the animals that had slower inactivation of T3 in the amygdala—an area of the brain that plays a major role in emotions, sensory perceptions, and “reward memory”—exhibited greater behavioral dependence on alcohol. In essence, it is possible that, like rats, humans are more prone to alcoholism if that region of the brain produces more T3 from T4. High levels of T3 in some regions of the brain induced by chronic alcoholism could be part of the reason for the psychological and physical symptoms that chronic alcoholics often experience, such as irritability, aggression, sweating, and trembling. In the field of psychothyroidology, another breakthrough is the discovery that an imbalance of thyroid hormone in the brain can be responsible for attention deficit hyperactivity disorder (ADHD).

Cynthia, twenty-five years old, was referred to me by a family practitioner because of elevated thyroid hormone levels and a slightly high TSH. She had been changing jobs on a regular basis because she was never able to concentrate well enough or stay still while working.

Cynthia had been suffering from attention deficit hyperactivity disorder since childhood, but doctors never made the connection between her attention deficit and the thyroid. She told me:

When I was younger, the teacher would be talking, and I would be off looking at the acoustic ceiling and getting totally lost. Then I would go back, and everybody would be flipping the page, and I would be trying to catch up. In class, I tried to listen to the teacher, but I couldn't understand why I didn't get it. I understood what she was saying, but I couldn't catch on. We had a comprehensive exam in English, and I tested low even though I read pretty well.

Even now, I read two paragraphs and may not even remember what I read because I would be thinking of something else simultaneously. I cannot concentrate on what happens at work or what I'm going to fix for dinner. I'll be driving and not remember having driven to a certain point. I'm aware of the cars around me, but I'm not really thinking about my surroundings. At the same time I feel hyper. I can't keep my feet still. I have a lot of energy. All up and about.

Cynthia's condition turned out to be related to a familial, genetically mediated brain thyroid hormone imbalance called "syndrome of thyroid hormone resistance." In these patients, a genetic defect causes thyroid hormone to work less efficiently in the brain, pituitary, and other organs.⁵ Therefore, despite high blood levels of thyroid hormone, the brain may in fact be deficient in the hormone, resulting in attention deficit.

Relatives of children with ADHD seem to be at much higher risk for having the disorder as well. Some relatives have been noted to be antisocial or depressed, perhaps as a result of how inefficiently T3 works in their brains. Adults afflicted with this condition tend to have high anxiety levels and often become drug addicts.

Because the pituitary becomes less sensitive to thyroid hormone (does not sense correctly the amount of thyroid hormone in the bloodstream), higher TSH levels result, causing the thyroid gland to produce more thyroid hormone. Paradoxically, despite high levels of thyroid hormone, many of these patients exhibit symptoms of underactive thyroid function and frequently experience hyperactivity as well.

In patients suffering from generalized resistance to thyroid hormone, thyroid hormone levels could affect other chemical transmitters such as noradrenaline, which is considered to be one of the culprits in ADHD. In such patients, the behavioral symptoms, such as distractibility and restlessness, may improve with T3 treatment. Thyroid hormone treatment could be used alone or in conjunction with other medications to regulate the noradrenaline levels in the brain.

In Chapter 5 we saw that thyroid hormone is essential for the chemical noradrenaline to work as a transmitter and perform its function in the brain. In fact, the highest levels of T3 produced in the brain are present in areas that are richest in noradrenaline.⁶ This striking overlap in brain regions between

thyroid hormone and noradrenaline explains why, if the body is not producing enough T3 or if it is not delivering it to the brain in the right amount, you require supplemental T3 in order for noradrenaline to work effectively.

In many patients suffering from depression, the root of the problem may be a low level or abnormal distribution of T3 in the brain even though the thyroid gland produces adequate levels of thyroid hormone. The reason for this may be a lower conversion of T4 to T3 or an inability of T3 to produce its effects on brain functions efficiently. Research has also concluded that some depressed patients have reduced levels of a protein called transthyretin, which normally carries T4 from the bloodstream into the brain.⁷ Transthyretin regulates noradrenaline in the brain and plays a major role in behavior. It also carries vitamin A in the brain and therefore has a protective effect against degenerative diseases of the brain.⁸ Depressed patients whose depression is caused by low transthyretin are less likely to improve with conventional antidepressants.⁹ Treatment with T3 in addition to the antidepressant can circumvent these delivery and conversion problems to enhance brain T3 content and thus resolve depression.

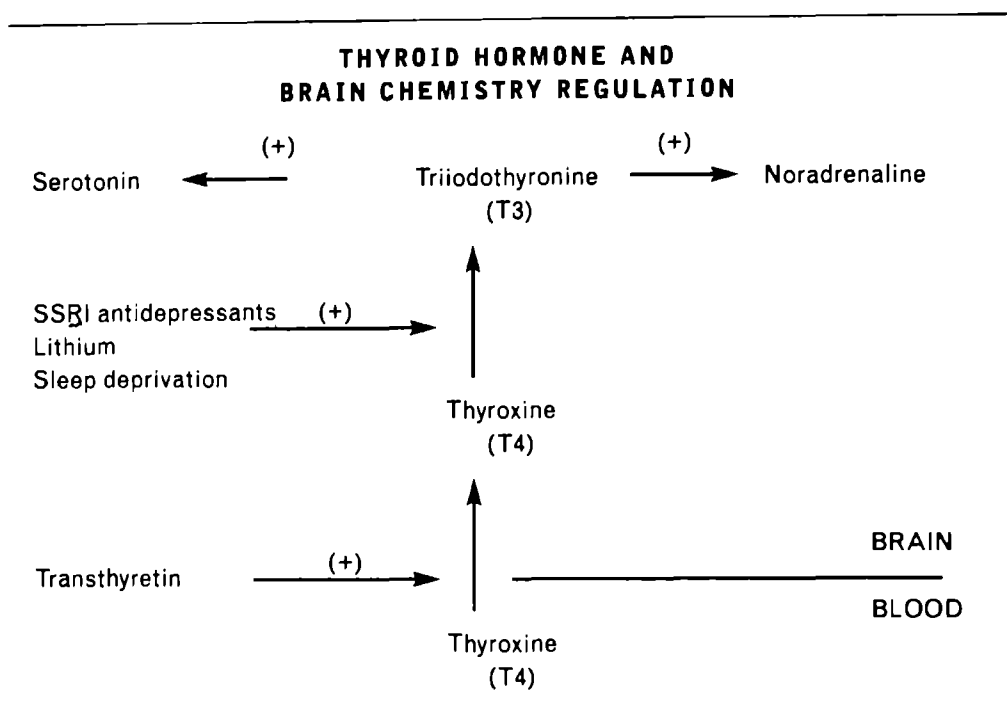
This is probably what happened to Anita. She is one of many patients I've treated who did not respond to a conventional antidepressant at first but then showed an almost miraculous response when T3 was added. A few months later, when her depression had resolved, I stopped her Zoloft but continued the T3 treatment. Her depression did not return while she was taking synthetic T3 alone. In her case, which is not necessarily the case of everyone suffering from depression, the primary source of the depression was probably an inability to generate sufficient amounts of T3. For this reason, T3 by itself eventually led to a long-term stability in mood.

Even if the primary brain chemistry problem is decreased noradrenaline or serotonin levels rather than T3, T3 levels in the brain decline as well, due to complex brain chemistry interactions. Therefore, depressed people with low noradrenaline or serotonin levels also have a low T3 content in certain regions of the brain. In essence, patients suffering depression due to either low noradrenaline or low serotonin levels in brain cells have brain hypothyroidism even though blood thyroid hormone levels are normal. To some extent, the depression caused by low serotonin or low adrenaline could be at least partly the result of low T3 levels in brain cells. In fact, antidepressants work to some extent by restoring normal T3 levels in the brain.¹⁰

For instance, the SSRI fluoxetine (Prozac) increases the conversion of T4 to T3 in brain cells and therefore ensures the availability of T3 in the brain. This, in turn, will raise serotonin. Other pharmaceutical treatments of depression (lithium, carbamazepine, and desipramine), and even some non-

pharmaceutical ones such as sleep deprivation, seem to produce some of their effects by increasing T3 levels in the brain and restoring normal serotonin levels.

The accompanying diagram illustrates the role of T3 in the maintenance of normal brain chemistry and shows how T3 treatment can help antidepressants become fully effective.



Recent research suggests that those patients with slightly higher T4 and lower TSH levels are more likely to respond to the addition of T3 to an antidepressant.¹¹ These changes are consistent with some deficit of T3 in the brain. In Chapter 5, we saw how depression, whether due to low serotonin or decreased manufacture of T3, will cause the hypothalamus and pituitary to stimulate the thyroid to produce more hormone. Decreased availability of T3 in the brain causes an activation of the thyroid system, which is designed to correct the deficit of T3. But often this activation is not sufficient, and T3 levels in the brain remain suboptimal. Once a patient receives T3, the symptoms of depression resolve, T4 goes back down, and TSH goes back up to normal.

Consider the case of Melissa. She tried several antidepressants, but none of them cured her depression. It was only when T3 was added to her treatment that the depression resolved. Most likely this resistance to the

antidepressant medication was caused by the persistence of low T3 levels in the brain. After she divorced her husband, Melissa said:

My mind had a dullness. I didn't really experience life. I was dealing with the children and the tremendous amount of financial worries. I went into a depression. Sometimes I couldn't get out of bed. I went to counseling. But gradually I was not able to cope with anything. I tried to commit suicide.

They first put me on Prozac, which gave me relief for a few weeks. It took a lot of inhibitions away. The second month, I started noticing the depression coming back. Then the psychiatrist thought I would do well on the tricyclic antidepressant Anafranil, and in some ways that drug was very pleasant. Things weren't quite as stressful. All the sexual function was back. I ate slower. Then the depression came back.

Melissa's depression improved and temporarily resolved in the first few months of Anafranil treatment. But the symptoms returned, possibly because of the persistence of low T3 levels. When synthetic T3 was added, at 5 micrograms three times a day, Melissa's depression went away.

"The thyroid pill was a miracle for me," she said. "Now I am like a new person. When I started on thyroid hormone, I started having energy. In the mornings, I would feel good when I got up. A lot of my self-esteem came back. I was sleeping better. The anxiety went down. The mood swings were better."

The Best Way to Use T3 in Treating Depression

Norma and Melissa are among the millions of patients suffering either clinical depression or mood swing disorders who can benefit from treatment with thyroid hormone. Research has shown that antidepressants do not work in 40 percent of patients diagnosed with depression, even when high doses of antidepressants are used.¹² Half of those who fail to respond to tricyclic antidepressants, for instance, improve when the potent thyroid hormone T3 is added to the antidepressant medication.

Augmenting or potentiating the action of antidepressants is not the only way T3 can be useful. Thyroid hormone treatment also accelerates the action of antidepressants. In most patients, it takes several weeks for an antidepressant to begin showing an effect on the depression. When T3 is added to the antidepressant from the outset, the antidepressant may begin to relieve the symptoms sooner. Recently, an analysis of research published in the *American Journal of Psychiatry* showed that in five of six studies, T3 is much more effective than placebo in speeding up the response to the antidepressant.¹³ The

speeding-up effect is more obvious in women than in men. We don't know why this accelerating effect of T3 is seen mostly in women.

T3's effectiveness in boosting the efficacy of antidepressants in controlling depression is similar to that of lithium.¹⁴ The patient's symptoms often respond to the addition of T3 within a few weeks. Therefore, if no beneficial effect has been noted within three to four weeks, T3 treatment should be stopped.

Taking T3 along with the more modern antidepressant drugs—such as the SSRIs fluoxetine, sertraline, paroxetine, and citalopram—seems to benefit patients who have failed to respond using these medications alone. A recent study published in the *Journal of Affective Disorders* showed that the addition of T3 to an SSRI antidepressant causes a significant improvement in depressive symptoms and even remission of depression in 42 percent of patients who failed to respond to an SSRI alone.¹⁵ Another research showed that the addition of T3 to fluoxetine was effective in 62.5 percent of patients.¹⁶

Taking T3 along with an antidepressant does not work for all patients, however. One of the reasons may be the way psychiatrists administer T3 treatment, both in their clinical practices and in their research in this field.

In contrast to T4, T3 (Cytomel) stays in your system for a much shorter period. Cytomel comes in 5-, 25-, and 50-microgram tablets. Taking a single dose of 25 micrograms of T3 in the morning, for instance, causes T3 levels to increase above the normal range for a few hours. High amounts of T3 not only may not help but can cause adverse effects, both physical and mental.

A marked drop follows by midafternoon, resulting in wide fluctuations of T3 in your system. Since fluctuating T3 levels may reduce the effectiveness of this medication, I have found that dividing the total dose into two or three small doses is more effective and safer. The regimen I often prescribe is 5 micrograms three times a day, to be taken five hours apart (7:00 A.M., noon, and 5:00 P.M.). This is what I call "the rule of five." In severe depression, I prescribe a higher dose, such as 10 micrograms three times daily. Weeks later, with improvements in symptoms, the dose could be lowered to 5 micrograms three times a day. Using T3 treatment in this fashion, I have observed major beneficial effects in many patients who had not responded to antidepressants or had responded only marginally. Perhaps the secret is to provide steady levels of T3 without the major fluctuations that inevitably result from the high conventional doses given once a day by psychiatrists.

The dose that helps one person may not help another. For this reason, I also use compounded T3 in conjunction with antidepressants. This way you can have the dose adjusted according to your needs. You can use as little as

3 micrograms of T3 to help your depression. Compounded T3 will give you flexibility with respect to the dose, but also compounded T3 stays in your system longer than the synthetic Cytomel. Patients who suffer from significant anxiety often prefer the compounded T3 over the synthetic T3, Cytomel.

T3 alone prescribed in the way I just described may have great potential as an effective medication to treat depression, but it has not been tried frequently enough to advocate its use as a sole treatment at this time. It would theoretically work as the only medication in some depressed patients whose primary chemical imbalance is a low level of T3 in the brain. But research is needed in this field. It surprised me to see that one of the first two studies examining the use of synthetic T3 as an antidepressant assessed patients who were not taking antidepressants.¹⁷ T3 used alone was effective in treating the depression in those studies.

Surprisingly, too, in several patients the required dose consisted of only 15 to 20 micrograms daily in divided doses—a regimen quite similar to what I advocate for my depressed patients.

Note that not much research has been conducted on the use of T3 in combination with the atypical antidepressants, the newer serotonin-norepinephrine reuptake inhibitors (SNRIs), and the noradrenaline reuptake inhibitors. I have found, however, that T3 in the right amount does work with all newer antidepressants.

Treating Manic-Depression with Thyroid Hormone

The discovery in the 1940s that lithium could control manic-depression marked a watershed moment in psychiatry. Until that time, doctors believed that only psychotherapy could help manic-depressive patients. Now the options available to treat mood swing disorders have been expanded to include thyroid hormone treatment.

Treatment of bipolar disorder can be quite challenging to your doctor. In severe cases of bipolar disorder, the mood swings and the recurrent depression can affect the person at all levels and can lead to a wide range of health and social issues.

Bipolar patients are more likely to suffer from alcohol and substance abuse, eating disorder, obesity, insulin resistance, polycystic ovary syndrome, and non-insulin-dependent diabetes mellitus.¹⁸ The social stigma of having a bipolar disorder and the physical and mental suffering impair patients' social functioning and their performance at work. For this reason, you will need a tremendous amount of help not only from your doctor but also from your family. You should also learn to recognize the early symptoms of recurrence and seek help right away. You should learn to improve compliance, accept the illness, manage your social life better at both

the professional and emotional levels, and learn to deal with stress that could trigger a depressive episode.

In recent years, several new medications have become available that are quite effective in stabilizing your mood and in preventing recurrent mood swings. A well-balanced treatment can make your mood more even and will enable you to prevent the occurrence of health issues associated with bipolar disorder. But you need to keep in mind that the thyroid could be the problem and the solution for this condition. In Chapter 5, I have detailed how a thyroid imbalance can promote a bona fide mood swing disorder or reshape and exacerbate a preexisting mood disorder.

Even if your thyroid gland is perfectly normal, a thyroid imbalance in the brain may be contributing to your mood swing disorder, and thyroid hormone treatment could greatly enhance the effectiveness of the medication you are receiving for your condition.

There is now increasing evidence that, in some people, a thyroid hormone imbalance localized in the brain, or an inability of thyroid hormone to work efficiently in certain regions of the brain, may contribute to the disorder. In such patients, the thyroid gland is functioning properly and producing adequate amounts of thyroid hormone, but the abnormality is in the brain. Correcting this abnormality by thyroid hormone treatment can lead to resolution of the mood swings.

As mood varies during the day, the amount of T3 produced in the brain by conversion from T4 also changes. Dr. Angel Campos-Barros, a researcher at the Free University of Berlin, has shown that the activity of the enzyme in the brain that converts T4 to T3 is subject to variations during the day.¹⁹ This leads to fluctuations in T3 levels in certain regions of the brain. The increase in conversion of T4 to T3 in brain cells corresponds to periods of increased activity in animals. Variations in T3 levels in the brain during the day and at night could be playing an important role in normal mood swings. Body temperature also fluctuates during the day. The same variations in T3 levels could be related to these temperature fluctuations. People suffering from a bipolar disorder tend to have lower temperatures during the day and higher readings at night,²⁰ possibly as a result of more ample changes in the levels of T3 in the brain.

If you are suffering from a mood swing disturbance called seasonal affective disorder (SAD), you may also be having a problem with the delivery of adequate amounts of thyroid hormone in your brain. Like thyroid disease, SAD affects more women than men. It is estimated that 80 percent of patients with SAD are women.²¹ For some patients, SAD of the depressive type occurs annually, usually in winter or early spring. Research suggests that persons with SAD lack thyroid reserve²²—a shortage that becomes more pronounced in winter and spring. The seasonal variation in thyroid hormone

levels (higher in winter than in summer) suggests a need for more thyroid hormone in the wintertime, when your body tends to generate more heat. People unable to meet these demands may have a seasonal deficit in thyroid hormone in the brain that could account for seasonal mood abnormalities. With that in mind, and in light of the fact that patients with mood swing disorders may have a thyroid hormone abnormality in the brain, it is not surprising that thyroid hormone treatment is effective in the treatment of mood swing disorders.

Researchers have been able to successfully treat patients suffering from manic-depression with high doses of thyroid hormones. This treatment added to lithium, for example, eliminates the wide mood swings. Lithium may not be effective when used alone.²³

Thyroid hormone also enhances the benefits of other mood stabilizers that are typically used for the treatment of bipolar disorder. A mood stabilizer is a medication that is effective in treating acute manic and depressive symptoms, and at the same time is useful in preventing the occurrence of manic or depressive episodes down the road. If you are taking an antidepressant without a mood stabilizer, you may easily flip into mania.

Newer medications are often used instead of or in conjunction with lithium to treat and prevent mood episodes. The current trend, in fact, is to use a combination of at least two medications for optimal mood stabilization and prevention of major mood swings, simply because no medication used alone can provide perfect mood stabilization. When added to antiseizure medication and atypical antipsychotics (see table), thyroid hormone will enhance their effectiveness in patients with bipolar disorder.

The atypical antipsychotics are medications that stabilize mood and prevent depression and anxiety symptoms. They act through dopamine and other transmitters in the brain. The most-used atypical antipsychotics are olanzapine, risperidone, quetiapine, ziprasidone, and aripiprazole. A combination of an atypical antipsychotic and lithium is well tolerated and should be the first way to treat patients with severe mania.

Anticonvulsants and some other novel treatments have more pronounced antimanic effects than antidepressant effects. Lamotrigine works very well in treating acute mania, preventing bipolar depression and recurrence of mania. Research published in the *Journal of Affective Disorders* showed that lamotrigine is also effective in patients with mixed cyclothymic-dysthymic temperament.²⁴ In fact, it is effective in all forms of mood swing disorders and can be used in conjunction with thyroid hormone. The other antiseizure medications (e.g., valproate and divalproex) are also effective in preventing mood episodes and can be used instead of lithium. If you suffer

from anxiety as well, you will be less likely to respond to antiseizure medications. Low-dose risperidone will better help your anxiety symptoms.²⁵

You need to know that valproate can cause menstrual abnormalities and an excess of male hormones. It can also promote insulin resistance, metabolic problems, and even polycystic ovary syndrome.

MOOD STABILIZERS USED IN BIPOLAR DISORDERS

Drug	Trade name	Common side effects
ATYPICAL ANTIPSYCHOTICS		
Aripiprazole	Abilify	Anxiety, dyspepsia, gas, constipation, dry mouth, headache, irregular heartbeat, irritability, weakness, light-headedness, nausea, nervousness, rash, restlessness, sleepiness, difficulty sleeping, vomiting, weight gain
Quetiapine	Seroquel	Drowsiness, dizziness, constipation, dry mouth
Risperidone	Risperdal	Drowsiness, dizziness, fatigue, nausea, constipation, weight gain, nervousness, difficulty concentrating, difficulty sleeping, runny nose
Ziprasidone	Geodon	Drowsiness, rash, decreased appetite, cough, runny nose, dry mouth
Olanzapine	Zyprexa	Drowsiness, dizziness, dry mouth, constipation, increased appetite, weight gain, dyspepsia, muscle weakness
ANTICONVULSANTS		
Carbamazepine	Tegretol	Drowsiness, dizziness, blurry vision, clumsiness, nausea, vomiting
Divalproex, valproic acid, valproate	Depakote	Drowsiness, hair loss, nausea, dyspepsia
Lamotrigine	Lamictal	Drowsiness, dizziness, trouble sleeping, nausea/vomiting, decreased appetite, muscle aches, blurred or double vision, headache, skin rash, clumsiness/shakiness
Topiramate	Topamax	Drowsiness, constipation, clumsiness, paresthesias, shakiness, slurred speech, decreased sweating, decreased concentration

Drug	Trade name	Common side effects
Gabapentin	Neurontin	Drowsiness, dizziness, shakiness, back pain, dry mouth, constipation, increased appetite, dyspepsia

OLDEST MOOD STABILIZER

Lithium	Eskalith, Lithane, Lithobid, Cibalith-S	Drowsiness, increased thirst, shakiness, nausea, weight gain, poor memory, confusion
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The addition of an antidepressant such as an SSRI to mood stabilizers is often done to prevent depressive episodes. How long you need the antidepressant, however, depends on your clinical situation. Thyroid hormone is likely to have effects similar to those of an SSRI when used in conjunction with a mood stabilizer. Thyroid hormone does not work only in the usual form of bipolar disorder. It also works in patients with rapid-cycling bipolar disorder.

In rapid-cycling bipolar disorder, T4 adjunctive treatment (up to 500 micrograms) reduces manic and depressive symptoms. Thyroid hormone also can reduce the number of mood episodes manic-depressive patients experience. This suggests that mood swing disorders can be caused at least partly by a low thyroid hormone level in the brain or an inability of thyroid hormone to work efficiently in certain parts of the brain.

Recent research conducted at the University of California in Los Angeles also showed that addition of thyroid hormone in patients who failed to improve with medications resulted in either a total or partial response in all patients. The researchers also measured brain activity with positron emission tomography (PET) before and during treatment and found that the improvement in the bipolar condition correlated with an increase in activity in certain regions of the brain (the prefrontal and limbic regions) that are involved in mood disorders.²⁶

As I explain in Chapter 5, thyroid hormone imbalance plays such a significant role in the brains of patients with manic-depression that when their thyroid gland starts to fail, leading to a minimal shortage of thyroid hormone, they begin to experience a worsening of the manic-depressive seesawing.

Many physicians and patients have wondered, however, whether high doses of thyroid hormone would have harmful effects on other organs, particularly the heart and bones. A study assessed bone density in ten premenopausal women receiving high doses of levothyroxine for the treatment of manic-depression.²⁷ The patients exhibited no significant bone loss compared to control subjects and seemed to experience no adverse effects when given high doses of thyroid hormone.

More recent research has shown that patients with mood disorders do not experience side effects from too much thyroid hormone when compared with healthy people.²⁸ This implies that patients with mood swing disorders are somewhat resistant to thyroid hormone. However, despite this, I do not advocate high doses of thyroid hormone. If you have been prescribed high doses of thyroid hormone, you need to be monitored carefully for potential side effects.

At this time, I usually recommend T3 rather than levothyroxine for patients who require further treatment for manic-depression. It is clear that T3 should not be administered in doses higher than 25 to 30 micrograms a day, because if you combine the total daily production of thyroid hormone (including T4 and T3), this amount is equivalent to 25 to 30 micrograms of T3 per day in an average person. If higher doses are given, there is a risk of having too much thyroid hormone in the system.

Let me give a quick example of how T3 can help a patient with manic-depression. Priscilla, age forty-eight, had been diagnosed with manic-depression five years previously. She had tried several medications but in recent months had been taking valproic acid, an anticonvulsant medication also effective in treating manic-depression. Despite maximum doses of the drug, however, she had continued to relapse frequently into depression.

Priscilla's condition had been noticeable as far back as her teens. She had a tremendous drive and desire to do wonderful things. Her creativity flowed constantly. She had great ideas and liked to accomplish things. Her inability to bring some of these ideas to fruition was due to the fact that she would intermittently get into a depressed state and become unable to carry out her plans. Priscilla, like many bipolar patients, struggled with this discontinuity, in which periods of creativity and artistic sensitivity are typically interrupted by depressive episodes.

Priscilla described the struggle she had been enduring most of her life:

During the depressive period, I would become more withdrawn and agitated at the same time. The depression came about very insidiously. Unless you know that you have a bipolar disorder, which I did not know most of my life, you are ignorant about what is going on. It is slow and sneaky, and before you know it, you are overwhelmed with anxiety and depression and a feeling of hopelessness.

Her sister said, "It was absolutely tragic to see what happened to Priscilla. There came a point in time when I simply said to my family that I couldn't stand by and watch Priscilla live like this. She was deteriorating in front of our eyes, and if we didn't intervene and do something to help her, we were going to lose her."

Priscilla's treatment with valproic acid helped somewhat, but the dreadful

depressive periods, albeit of shorter duration, continued to haunt her. It was not until she started taking T3 in an appropriate amount that Priscilla's mood became stable and she felt better than ever. Priscilla has now been receiving thyroid hormone for three years, during which she has not experienced a single relapse of severe depression.

If you have suffered from rapid-cycling manic-depression and have not improved with conventional medications such as lithium, anticonvulsants, and atypical antidepressants, discuss with your psychiatrist the addition of thyroid hormone treatment. It may reduce the frequency of your mood cycles and stabilize your mood for a long period of time.

Monitoring T3 Treatment Is Crucial

The dose of T3 used to treat depression varies considerably from one psychiatrist to another. Regardless of the dose used, careful follow-up of patients and regular thyroid testing are important to avoid the serious physical and mental effects of thyroid hormone excess. Such thyroid monitoring, however, is not always done.

If a high dose of thyroid hormone is given to a patient with a psychiatric condition, hyperthyroidism may occur. Not only does the depression fail to improve, but further mental suffering is likely. The following example is of a manic-depressive patient who was followed by her psychiatrist for two years, during which she experienced tremendous mental suffering as a result of an unchecked thyroid hormone excess—an excess that her psychiatrist virtually ignored.

Natalie was thirty-seven when I first saw her for her thyroid condition. She had been diagnosed with manic-depression three years earlier, was treated with lithium, and was then prescribed T3 (Cytomel) at a dose of 50 micrograms daily. Her psychiatrist failed to do a regular follow-up, however. The excess thyroid hormone resulting from the Cytomel led to hyperthyroidism, which, in turn, caused Natalie's manic-depression to deteriorate significantly.

During her first visit to my office, Natalie said, "Initially, I noticed an increase in my energy level, but only for a short time. Then I reached a plateau. Later, the Cytomel made me progressively more sick. It was masked by the exaggerated symptoms that happen to someone on lithium, so it was deceptive and insidious. I developed such a sense of hopelessness."

When I tested Natalie, I found that her thyroid levels were very high. After she stopped the Cytomel, her thyroid levels returned to normal. She said, "It took me sixteen weeks to reach a point where I was beginning to get my thoughts back together—to be able to assess my situation rationally and reasonably. For the first time, I looked at things in terms of how I was going to make things better. That was monumental."

Endocrinology's impressive progress in finding remedies for mental suffering is overshadowed by the use—and perhaps the overuse—of antidepressants as primary solutions to brain chemistry imbalances. Yet the science of endocrinology is reaching a promising new frontier, one that begins at the border where we can resolve mental anguish with thyroid hormone treatment. In this chapter, I have shown how thyroid hormone can be used as part of the treatment of both depression and mood swing disorders in patients with normal thyroid glands.

Important Points to Remember

- If you are suffering from depression, mood swing disorders, alcoholism, or attention deficit disorder, the root of the problem may be a thyroid hormone imbalance or a disturbance in the way thyroid hormone works in some parts of your brain.
- Increasing evidence indicates that T3, the most active form of thyroid hormone, is an effective antidepressant when used in conjunction with a conventional antidepressant.
- If you have been suffering from depression but your antidepressant has not fully worked for you, adding 5 micrograms of synthetic T3 three times a day may resolve the depression.
- If you are about to start taking an antidepressant, you may want to consider adding 5 or 10 micrograms of T3 three times a day. This is likely to speed up the effects of the antidepressant. Remember that it usually takes two to three weeks for an antidepressant to start working on the symptoms of depression.
- If you have been combining an antidepressant with T3 and have done very well, discuss with your psychiatrist the possibility of decreasing the dose of the antidepressant.
- If you have a mood swing disorder such as a bipolar disorder, thyroid hormone can help your condition when used in conjunction with a mood stabilizer, even if your thyroid gland is perfectly normal.

**NO, YOU ARE
NOT MAKING IT UP**

Common Emotional
and Physical Interactions

7

WEIGHT, APPETITE, AND METABOLISM

The Thyroid's Actions

Julie, a twenty-four-year-old graduate student, was normally a cheerful, outgoing person. As a result of an underactive thyroid, however, she had started to gain weight, which caused her to become mildly depressed. Her weight problem affected her self-esteem to such an extent that she began to become shy and withdrawn. She said:

I had to watch everything that went into my mouth, because I was afraid of becoming fatter. But I had a huge appetite, and I ate anyway. I felt guilty about it. I would not go out to eat with anybody except one dear friend. I wouldn't eat in the cafeteria because I didn't want anyone, especially male friends, to see me eating.

I didn't have the energy or enough of a sense of well-being to go out to parties. I felt like I wasn't good enough. I used to like to go out dancing, but when guys would call and ask me out, I would say I was busy.

Julie's experience was typical of the vicious cycle of thyroid imbalance, weight problems, and emotional conflicts and serves to demonstrate again the intricacies of the relationship between brain and thyroid. Julie's weight gain resulted from three factors:

1. A slowing of metabolism due to the underactive thyroid
2. A decrease in caloric expenditure from getting less physical exercise, both because Julie was always tired and because she had less tolerance for exercise
3. Depression and anxiety, resulting in overeating and a lowering of Julie's self-esteem, which prevented her from going out, thereby further reducing her caloric expenditure

These three interrelated factors resulted in a significant weight gain. Julie herself blamed her depression and reduced self-esteem on her weight problem, when in fact at the core of her problem was a thyroid imbalance. When treatment began to address Julie's hypothyroid condition, all three factors—metabolism, reduced burning of calories, and depression-related overeating and lowered self-esteem—were resolved. Julie began to lose weight, her confidence returned and her outlook brightened, and she once again became more physically active.

Although, as we'll see, not all weight problems can be blamed on thyroid-related conditions, Julie's battle with weight gain is one faced by many people, and by women in particular. Obesity is becoming an epidemic worldwide and particularly in Westernized societies. A study published in the *Journal of the American Medical Association* in 1994 found that women in each of the race and ethnic groupings studied—which included non-Hispanic whites, non-Hispanic African-Americans, and Mexican-Americans—were more likely to be overweight than men were. The study also showed that half of non-Hispanic African-American and Mexican-American women were overweight and that women are more frequently overweight today than they were twenty years ago.¹ In the United States, the prevalence of clear-cut obesity in people older than twenty has almost doubled from 1960 to 1994.² At the present time, two-thirds of American adults have some weight problem. Obesity is at the root of a wide range of debilitating health conditions such as diabetes, high blood pressure, heart disease, sleep apnea, cancer, and osteoarthritis.

The social and cultural challenges faced by overweight women can be tremendous, due to the pressures to be slim. Many women claim that they eat virtually nothing, but they still have weight problems. The reason many of these women have difficulty losing weight, despite exercise and dieting, is probably a slow metabolism. The growing awareness that an underactive thyroid can result in weight gain by slowing metabolism, coupled with despair over their inability to find a reason for the weight gain and lose the weight, has led increasing numbers of people to seek medical help and insist that their thyroids be tested.

Physicians in general and thyroid specialists in particular often deal with women who are frustrated with their weight problems and believe that a thyroid condition is causing them. What is even more frustrating to these women is that many of them turn out not to have a thyroid condition. Nevertheless, there is no doubt that thyroid disease may be responsible for weight problems that, for many women, cannot be corrected without appropriate treatment of the thyroid condition. Equally important, though, is the need to take care of the mind as well as the body, before and even after correction of the imbalance.

Understanding Your Eating Behavior and Metabolism

To understand the weight issues that thyroid patients often face, you need to have a basic understanding of how thyroid imbalance affects the complex hormonal and chemical system that regulates weight. Even though the amount of food we eat differs from one day to the next, in normal circumstances we manage to maintain a fairly stable body weight simply because our food consumption matches the calories that we burn at all times. This regulation comes from the interplay of several chemical signals and hormones that work together to make sure that energy stores are maintained at a stable level.³ The leading hormone that plays a major role in this complex system is leptin. The hormone's name comes from the Greek word *lepto*, which means "thin." Leptin is a hormone that reduces appetite and enhances metabolism. When we lose weight as a result of reducing our food intake, leptin levels go down, and this is a signal to the brain that we need to eat. When leptin goes down, our metabolism also slows down so that we can conserve our energy stores.⁴ When we gain weight by overeating, our leptin levels go up, and this sends a signal to the brain that will make us want to eat less and make our metabolism speed up to minimize further weight gain.

To fulfill its job, leptin needs to be efficient at working on a wide range of chemicals in the hypothalamus that regulate satiety, or a feeling of fullness, such as neuropeptide Y. These hypothalamic chemicals interpret and process all information concerning the energy situation in our body, and leptin is one of the hormones that provide this information. If the leptin that your fat tissue produces does not work efficiently, you are very likely gaining weight. You may be eating the same amount and kind of foods as another person, but your body composition and your weight may be quite different. This has to do with a difference in your genetic background with respect to regulating the efficiency of leptin. If your genes are causing leptin to be not as efficient, any minor deviation from a good diet means that you gain weight.

Obesity is in part due to the inability of leptin to fulfill its job both in the brain and as a regulator of metabolism. In fact, the expanding knowledge of the intricate ways leptin works is leading to the development of newer medications that may be quite effective in the treatment of weight excess and diabetes.⁵ Research has shown that exercise makes leptin work more efficiently.⁶ When you exercise, leptin promotes higher levels of neurotransmitters, which also have a beneficial effect on depression.⁷ Sibutramine, an FDA-approved medication for weight control, also makes leptin work more efficiently.

The efficiency of leptin at speeding up your metabolism goes hand in hand with the efficiency of insulin at regulating sugar and fat metabolism.⁸ Insulin is a hormone produced by the pancreas in response to intake of

simple sugars. Insulin and leptin tell your brain how much fat reserve you have. The more fat you gain, the higher leptin and insulin levels are. If your leptin does not work efficiently, you will gain weight and you will become insulin-resistant, which means that insulin is not doing its job properly. Insulin inefficiency also has something to do with the inflammation in fat tissue. The more fat you have, the more you produce chemicals that cause inflammation in your bloodstream. The more insulin resistance and the more inflammation you have, the more likely you will become afflicted with metabolic syndrome. Metabolic syndrome is defined as having too much abdominal fat (an "apple" body shape), increased cholesterol and triglycerides that lead to narrowing of the arteries and potential heart disease, high blood pressure, and insulin inefficiency that precedes the occurrence of non-insulin-dependent diabetes.

Leptin, among others, works on a chemical system called the CBI endocannabinoid system, localized in the hypothalamus. When this system is stimulated, your hunger level increases and your metabolism slows down. This system also makes you more insulin-resistant. By this mechanism, the endocannabinoid system plays a major role in regulating the amount of fat you accumulate, your satiety level, and your metabolism. One of the medications that has been developed and will be soon approved in the United States is rimonabant, a selective cannabinoid-1 receptor blocker. Rimonabant lessens your appetite and enhances your metabolism. This medication has been tested in many countries and has been shown to promote sustained weight loss and to lower your cardiovascular risk.⁹

Eating behavior and satiety are also regulated by chemical signals produced by the gastrointestinal tract. The gastrointestinal system and the brain communicate at all times to regulate how much and what food you eat.¹⁰ The amount and type of the chemical signals triggered by a meal depend to a great extent on the amount and type of food that you eat. One of the signals produced by the gastrointestinal tract that regulates your satiety level is the hormone ghrelin. When you do not eat for a few hours, ghrelin levels go up. It does the opposite job of leptin. Instead of suppressing appetite, it makes you want to eat more.

Ghrelin also has the opposite effect of leptin on metabolism. It slows down your metabolism and makes you burn less fat. In overweight people, ghrelin levels may be higher than normal, perpetuating increased hunger. Research has shown that when you eat fat, your ghrelin level remains high, which will make you continue to feel hungry even though you have consumed a large number of calories. When you eat a high-protein meal, ghrelin levels go down, and this will make you want to eat less.¹¹ If you are successful at losing weight, your ghrelin levels improve, and this will reduce your hunger level. When you lose weight, you will be less likely to be hungry than

before. In essence, excess weight brings in hunger, and hunger brings in excess weight.

How Thyroid Hormone Affects Both Eating Behavior and Metabolism

Thyroid hormone is one of the main hormones that regulate the amount of leptin produced and the efficiency of leptin. It also interacts with the hypothalamic chemicals involved in regulating our satiety level and the chemical hormones that are released by the gastrointestinal tract that allow communication between the gastrointestinal system and the brain. Too much thyroid hormone in your system will make your leptin levels go down, and this will contribute to the excessive hunger that hyperthyroid patients constantly experience. Excess thyroid hormone will also make your ghrelin level lower, and this will make your metabolism speed up, causing you to lose weight despite eating more.

Low thyroid affects leptin and its efficiency, too. Hypothyroidism is often associated with weight gain and an inability to lose weight by dieting. This weight gain is best explained by the slowing of the body's metabolism, so the breakdown of fat and energy is much lower than normal.¹² When the potent thyroid hormone T3 is not delivered in sufficient amounts, leptin becomes inefficient at enhancing metabolism.¹³ This inefficiency also increases your cravings. And if your metabolism is low due to inefficient leptin, this inefficiency will in turn make the thyroid hormone in your body less effective at burning calories.

Thyroid hormone will also affect your weight by working on chemical transmitters. Some of the chemical transmitters in the brain that regulate emotions, mood, and perception of stress, such as serotonin, noradrenaline, GABA, and beta-endorphin, are the same chemicals implicated in the complex interactions regulating satiety, food selection, and even taste.¹⁴

The body's noradrenaline-using system stimulates carbohydrate ingestion and affects how much we eat. While a person is eating, serotonin rises in the brain to a point at which the hypothalamus senses a feeling of satiety, and so you eat less or stop eating altogether. While noradrenaline increases the desire for fats and carbohydrates, serotonin decreases the desire for both. An excess or a deficiency of thyroid hormone alters the levels of these chemicals and will change your eating behavior.¹⁵ Thyroid hormone also has direct effects on appetite centers in the brain.

A thyroid imbalance may lower your serotonin and your mood. As a result, you will crave fats and carbohydrates and will consume larger portions of food. Too much thyroid hormone in the brain causes a person to eat more

often and to select carbohydrates rather than other types of food.¹⁶ A patient with a thyroid imbalance who is depressed may not admit to overeating. This is because overeating is often the result of an impulse triggered by low serotonin levels in an attempt to ease or relieve the low mood and anxiety. Food is viewed as a way to feel better. Typically, people suffering from serotonin deficiency report an improvement in their mood after consuming carbohydrates.

The craving for carbohydrates and even the bingeing that thyroid patients may experience explains why some may be temporarily misdiagnosed as having reactive hypoglycemia, a condition characterized by low glucose (sugar) in the blood. (See Chapter 10 for more information on hypoglycemia.)

Often people who are hypothyroid lose control of their eating patterns and cannot follow the nutritional and lifestyle guidelines necessary to alter caloric intake and boost mood. They may no longer be able to schedule meals and snacks or choose mood-enhancing foods. The increased caloric intake coupled with low metabolism may result in significant weight gain. Hypothyroid women who gain weight are often more aware of their weight gain than nonhypothyroid women simply because of their anxiety, depression, and insecurity, all of which are heightened by the added weight.

Frequently, hypothyroidism causes someone who has been exercising regularly to stop exercising due to tiredness, muscle weakness, shortness of breath, and depression. The lack of exercise coupled with an increased appetite, also due to the thyroid condition, may result in rapid and significant weight gain, which can cause profound depression.

Candace is an attractive young woman who had been married for two years when I saw her. She used to be a health-conscious, physically fit person who made going to the gym and exercising part of her daily routine. Her lifestyle gradually began to change when she started feeling tired, sleeping more, and noticing other symptoms of hypothyroidism. When she was hypothyroid, keeping her weight down was a struggle. She told me:

When I started to gain weight, I didn't want to be around any of my friends. I didn't want to go out dancing or drinking. I didn't want to do anything, mostly because I didn't feel good about the way I looked after gaining so much weight. But I was also becoming more inactive as a result of my tiredness. I went to my primary care physician twice because of the weight gain and the fatigue. I figured something had to be wrong.

I was eating a lot more, constantly nibbling. I don't know if it made me feel stronger physically or better mentally. I would start off every day being careful and eating grapefruit, but by the afternoon I would get really tired and break down. I'd start craving something, often a sweet. If I had it, I seemed to enjoy it more than before.

Normally, when I exercise, I find that it helps to suppress my appetite. Almost overnight, I went from running three to six miles per day to not working out at all. I began to eat more, but not enough to gain thirty pounds. As I gained weight, I became irritable. As a result of the irritability, I ate more and gained more weight. I would sit for hours in the dark and quiet.

I lost control over everything. I'd wake up and say, "I'm going to eat right today." But by the end of the day, I didn't care. While going home, I couldn't make it twenty feet out of my way to stop at a grocery store and buy decent food. I'd stop and get a hamburger, go home to eat it, and then go to sleep. The cycle took complete control of my life.

Lectures on willpower have no effect on people who are suffering as Candace did. They simply cannot continue eating a healthy diet and exercising as they used to. Candace's mother said, "We went on Jenny Craig together. The diet worked perfectly for me, but not for her. She kept cheating and didn't have the willpower to do it. She was depressed and crying."

Candace's case illustrates the vicious circle frequently generated in hypothyroid people—a cycle in which hypothyroidism triggers depression and low self-esteem, which are then coupled with changes in metabolism. The depression contributes substantially to the weight gain, and the weight gain exacerbates the depression. Although these people feel as if their increased eating could not possibly be causing such rapid weight gain, they fail to take into account that they typically become less active physically. In this setting, when doctors diagnose hypothyroidism and administer appropriate treatments, people will lose weight and their depression improves. So the vicious circle can be broken at two levels—by enhancing metabolism and by alleviating depression.

When Your Gland Is Overactive

Many women with an overactive thyroid are pleased with the weight loss resulting from their condition. The weight gain that they experience when they begin taking medication to correct the overactive thyroid can be a disappointment. I have seen women who stopped taking their thyroid medication on purpose—if the other symptoms of hyperthyroidism are not so severe, they prefer to continue putting up with these symptoms rather than regain the weight. This is something I try to discourage. If left untreated, excess thyroid hormone in your system can eventually lead to heart problems, bone loss and osteoporosis, and many other debilitating conditions.

This desire to lose weight at any cost applied in the case of Audrey, age thirty-two, who had had some weight problems most of her life but became slim when she became hyperthyroid. I started her on antithyroid medication

and asked her to return for a follow-up with repeat thyroid testing. Displeased with the weight gain after only three weeks of treatment, Audrey stopped taking the medication and returned to see me eight months later, still hyperthyroid.

When I asked her why she had not followed through with her treatment, Audrey replied honestly:

First, I started going through denial. I started feeling good, a little normal. The underlying fact was, I knew all that weight loss was artificial. I never did a thing to lose the weight. I knew I would start regaining all that weight back. I played along with the idea that it wasn't so bad. I told myself, "I don't feel that bad, so I'll just stop taking the medication." The medication started making me gain the weight back.

We went on vacation, and I purposely left it at home. My husband found out and made me go to a pharmacy that was able to fill the prescription. I still didn't take it for the two weeks we were there. I had finally gotten into something different from the one-piece bathing suit I had always worn. I had a two-piece and I remember thinking, "There is no way I'm going to take this medication and gain weight while I'm down here." Even after I came back home from vacation, I had an appointment with you afterward. I thought, "Oh, man, if he does lab work, he's going to see that I haven't taken it in a while." I was in denial that there wasn't anything badly wrong with me and that the disease was not really so bad because I was looking better.

Prompt treatment of the overactive thyroid is extremely important to halt the deleterious effects of excess thyroid hormone on the body and mind. While getting your thyroid regulated, you should adhere to commonsense principles to achieve optimal weight control.

It is not necessarily true that an overactive thyroid always results in weight loss, just as it is a mistake to believe that an underactive thyroid always causes weight gain. In fact, some women with an overactive thyroid gland gain weight instead of losing it.¹⁷ What happens in these patients is that the increased body metabolism, which tends to reduce fat storage, is coupled with increased caloric intake. Hyperthyroid patients often crave food and eat large amounts, much more than they used to, because of thyroid hormone's direct effect on the mechanism for appetite regulation, which is located in the brain. The increased caloric intake is probably a defense mechanism designed to preserve the body's energy when it is flooded with thyroid hormone.

A good example of this can be seen in the case of Jessica, who developed Graves' disease at the age of thirty. Prior to the onset of her thyroid condition, she had always been slim and physically fit. When her thyroid became overactive, in addition to the typical symptoms of hyperthyroidism, she expe-

rienced a significant weight gain, which made her quite depressed and increased her irritability. She said:

I felt exhausted and tired, and I was depressed, with crying spells. There was a definite increase in appetite while I was gaining. I don't know if it was appetite or because I was so exhausted, but I ate more to satisfy myself. It took a while to find the right dosage of medication to make me feel better again. While I was taking the medication, I lost weight because my thyroid was getting better and I made a very special effort. I was extremely careful and managed to lose all the weight. I had to be very strict.

Quite often, the increased fat breakdown and energy loss generated by the excess of thyroid hormone significantly exceed the hyperthyroid patient's caloric intake, and this negative balance will lead to weight loss. In some people, however, the thyroid hormone's effect on the appetite center and the increased caloric intake resulting from the severe anxiety caused by hyperthyroidism or depression combine to cause them to take in more calories than are burned as a result of enhanced metabolism. The resulting positive balance will cause weight gain, which can be as significant as the weight gain hypothyroid patients may experience.

Because the weight gain resulting from an overactive thyroid can be as depressing for the hyperthyroid person as for the hypothyroid one, mind-body treatment is important for controlling stress and anxiety.

Why Weight Problems May Persist Even After the Thyroid Imbalance Is Corrected

Many women who gain weight when they are hypothyroid don't fall back to their original weight even after their thyroid condition has been corrected with thyroid hormone treatment. Physicians and others often attribute the lingering weight to a lack of effort on the patient's part to reverse the gain.

This is a typical dead end faced by many thyroid patients, who may persist in thinking that their thyroid is still not regulated and continues to be responsible for their weight problem. Because of this belief, physicians caring for the thyroid condition face dissatisfied, frustrated, and unhappy patients who feel they are not receiving answers, guidance, or explanations. Many physicians, however, do not appreciate or sympathize with the mind-body changes their patients have just undergone and the confusion they may feel in having had to redefine who they really are.

Part of the problem is that the disturbances affecting the efficiency of leptin and other chemicals and hormones involved in weight regulation may

not completely reverse with correction of thyroid imbalance. Continued inefficiency of leptin at regulating satiety and metabolism may be at the root of the problem for some patients. Some of this inefficiency may be due to the deficit of T3 that results if your underactive thyroid is corrected with T4-only treatment. Animal research has shown that rats with normal thyroid glands increase their T3 levels in response to eating a high-fat diet, preventing them from becoming obese.¹⁸ It is possible that the minute deficit of T3 in patients treated with thyroxine makes leptin less efficient in enhancing metabolism.

Mood problems may be another reason why some patients remain overweight after being put on thyroid hormone treatment. If you suffer from an ongoing low mood or anxiety despite treatment with thyroid hormone, you are more likely to continue to crave food and eat more, and the weight problem will perpetuate the low mood.

Too, several antidepressants and mood stabilizers can aggravate your weight issue (see Chapter 17 for details). If this is the case, you may want to consider changing your medication.

If you continue to be overweight despite adequate thyroid hormone treatment, you need to follow a strict diet and a regular exercise program to return to your ideal weight. The exercise program should aim not only at burning extra calories but also at building up the muscle mass that was lost during the imbalance. At least now the medication will have eliminated your cravings and fatigue, barriers that had prevented you from losing weight before the diagnosis of underactive thyroid.

As noted in the previous sections, hyperthyroid patients also tend to gain a significant amount of weight when their thyroid condition is treated appropriately and corrected. After correction of hyperthyroidism, their weight may be even greater than it was before they became hyperthyroid. One study showed that nearly half the women treated for hyperthyroidism experienced a significant weight gain after their thyroid function became normal.¹⁹ Recent research has shown that the weight gain experienced by patients treated for Graves' disease was the same whether the patients were treated with radioactive iodine or surgery.²⁰ Although many patients may believe that their thyroid has become underactive and is therefore responsible for the weight gain, the mechanism for the weight gain in this case is entirely different.

There are three primary reasons for the rebound weight gain that you may experience after treatment of your hyperthyroidism:

1. When your body is exposed to too much thyroid hormone, your metabolism shifts to a higher level. After normal thyroid function is restored, your metabolism becomes slower than normal for some time. The reason is that your system views the excess of thyroid hormone as a threat that you will be losing your energy stores. As a result, your sys-

tem needs to accumulate as much energy as possible and be ready for a future threat. It makes this happen by affecting the level and efficiency of leptin and other chemicals that regulate your metabolism. Research has shown that after treatment of an overactive thyroid, leptin levels may remain low for some time.²¹ Treatment of your overactive thyroid often leads to a change in body composition, related to insulin changes and to low growth hormone secretion. The weight gain and the symptoms that patients experience after treatment of an overactive thyroid are in fact symptoms of growth hormone deficiency.²²

2. If the excess thyroid hormone has disturbed the appetite center, the disturbance may persist even after the thyroid function is corrected. This could lead to residual effects, including increased appetite and increased caloric intake.
3. Hyperthyroidism also causes a breakdown of muscle. Many hyperthyroid patients may experience some loss of muscle mass as a result of their condition. The most significant muscle loss tends to occur in muscles such as the quadriceps and the biceps. Once thyroid levels have become normal, the compensatory rebound of building up energy stores will be directed at building up fat rather than muscle. One study showed that after correction of hyperthyroidism muscle strength remains lower than normal.²³ For this reason, exercise and physical activity aimed at building up muscle mass that was lost during hyperthyroidism will enhance your metabolism and help you prevent weight gain after hyperthyroidism is corrected.
4. Excess thyroid hormone promotes depletion of antioxidants, which, in turn, will allow free radicals build-up that will increase inflammation of fat tissue. This results in the slowing of metabolism and the worsening of insulin resistance.

If you have suffered from excess thyroid hormone, you need to be proactive and implement a weight management program as soon as your thyroid levels have become normal with treatment. You need to be patient and perseverant, as you are likely to become frustrated with the weight struggle. As time goes by, you will find it easier to wage the weight battle as long as you keep your thyroid well regulated and adhere to the weight management guidelines I detail below.

Controlling Your Weight

With support from your physician, family, and loved ones, you can take steps to counteract the effect of a thyroid condition on your weight once your thyroid imbalance is corrected. To keep the weight off, you need to eat less,

exercise more, take adequate amounts of antioxidants, and engage in a behavior modification program that will allow you to maintain the results that you have achieved, and perhaps use medications that suppress appetite if necessary. Changing your lifestyle should be the first step to lose weight, and you need to continue the weight management program on a long-term basis. People who do not maintain the program on a long-term basis are very likely to regain the weight that they have lost. This is the yo-yo syndrome. Americans spend over \$33 billion a year on weight loss products and services. Nevertheless, only one-third of people trying to lose weight eat fewer calories and exercise more.²⁴

To promote weight loss, regular exercise at least four to five days a week, healthy eating habits, and high-fiber products are a better approach for most people than long courses of appetite suppressants. (I will detail exercise recommendations in Chapter 19.) Be proactive and discuss with your doctor all the components of your weight loss program. Obtain as much dietary advice as you can, and set with your doctor realistic goals and obtain precise exercise recommendations.

If you are taking thyroid hormone treatment for an underactive thyroid and continue to struggle with weight gain despite having normal blood tests, this may indicate that the thyroid hormone treatment you are receiving is not quite adequate.²⁵ Changing the treatment from L-thyroxine to a combination of T4 and T3 may provide you with the right ingredients to lose weight. Treatment with synthetic thyroxine alone may not provide all the T3 needed to regain normal metabolism. The full amount of thyroid hormone required to maintain a normal thyroid function can be given primarily in the form of synthetic thyroxine, together with a small amount of T3. T3 treatment affects the brain chemicals that control eating behavior. Delivering this extra T3 might help the hormone leptin to speed up metabolism. A lack of T3 in bodily tissues will reduce the efficiency of the fat breakdown process, resulting in the fat's being stored as excess weight.

Do not rush into a low-calorie diet (800–1,200 calories per day), such as those promoted by Slim-Fast, Jenny Craig, or NutriSystem, or a very low-calorie diet (less than 800 calories per day), such as Optifast and Medifast. When my patients rely exclusively on low-calorie diets to solve their weight problems quickly, they often regain the weight because it is hard to continue such diets indefinitely. Rather, follow a “balanced-deficit diet,” which takes into account how many calories you burn a day. A balanced-deficit diet provides fewer calories than you would require to maintain your current weight. You can also follow a balanced-deficit diet just by changing the type of food you eat rather than by reducing the amount of food and counting calories. In the next section I will outline an eating plan for optimum thyroid health.

A Thyroid Eating Plan

The best eating plan for someone with a thyroid disorder, one that has unique beneficial effects on your weight and on your overall health, is a low-glycemic-load, high-complex-carbohydrate, low-saturated-fat diet. This diet is a safe one that will make leptin and insulin more efficient. It will cause you to lose weight and help you keep the weight off. It will promote satiety, give you a feeling of fullness, and this will lower your total caloric intake—a key factor in success. It will also provide you with good amounts of vitamins, minerals, trace elements, and fiber.

I became an advocate of a low-glycemic-load diet when I realized that many of my patients were unable to lose weight unless they reduced simple sugars in their diet. Refined sugars and simple sugars in general cause sugar to enter the bloodstream faster and produce a higher rise in blood sugar (blood glucose) than any other foods. The higher the blood glucose level after food is consumed, the higher the resulting level of insulin.

How high your blood sugar goes up in response to a particular food is expressed as that food's "glycemic index." The higher the rise of blood glucose after a particular food is eaten, the higher the food's glycemic index.

Not only do you need to reduce the amount of simple sugars that you consume per day, but also you need to lower the glycemic load in each meal. The glycemic load is the amount of simple sugars that you consume. One way to reduce simple sugar intake is to replace white bread with whole-grain bread, which has a lower glycemic index. Grains should be consumed in their minimally refined forms to produce a low glycemic load. Increase your consumption of oats and barley, too. This will lower the glycemic load of the meal, simply because of the high amount of soluble fiber these grains contain. Oats will also help protect your brain against oxidative damage.

In general, complex carbohydrates, such as whole grains, barley, nuts, pumpernickel bread, and dried legumes, have a lower glycemic index than foods rich in simple sugars, such as white bread, potatoes, chips, and sweetened breakfast cereals. Also, avoid sweet potatoes, sweet corn, white rice, cookies, biscuits, and buckwheat—all of which have an intermediate glycemic index. Instead, consume a diet rich in healthy, serotonin-enhancing complex carbohydrates, such as green vegetables, crackers with no added sugar, whole-grain bread, and unsweetened muffins.

A food's glycemic index is not determined solely by its simple sugar content. Other factors may include the amount of fat, protein, and fiber, as well as the methods of processing and cooking. For example, high amounts of fat increase a food's glycemic index, whereas high amounts of protein and fiber may lower it. For this reason, avoid cookies, ice cream, doughnuts, cakes, and pastries, which usually combine refined sugars and lots of fat.

Meals high in protein will delay the rise in blood sugar and cause fewer symptoms. If you have significant blood-sugar-related symptoms, do not overcook your vegetables. Research, for instance, has shown that eating raw cornstarch lowers the blood sugar response because of its slow absorption from the gastrointestinal tract, whereas cooked cornstarch results in a higher blood sugar response than uncooked cornstarch.²⁶

To lower the glycemic index of your meal, increase your fiber consumption. This will raise insulin efficiency and give you a sense of fullness that ultimately will lead to decreased calorie intake. Raising your consumption of whole-grain ready-to-eat cereal will help you maintain the weight loss you have achieved. Cereal consumption will also give you more calcium, fiber, iron, folic acid, vitamin C, and zinc, and will cause you to eat less fat and cholesterol. It should be a routine part of your diet. In fact, cereal can be used to promote weight loss when you consume it as a controlled meal replacement.²⁷ When you begin your weight loss program, substitute a bowl of whole-grain cereal for either lunch or dinner. This will help you achieve the initial weight loss that you desire.

Nuts are very good for you because they contain high amounts of unsaturated, polyunsaturated, and monounsaturated fats and lower the glycemic effect of a meal. Use nuts and nut butters either to replace a meal or to substitute for refined grain products or meat. This way, you will not end up consuming too many calories.

Even though fruits are rich in fiber, vitamins, and antioxidants and are typically included in healthy diets, you need to know that they are quite rich in simple sugars (fructose). For this reason, do not eat excessive amounts of fruits. Select the fruits that will give you the lowest glycemic load, such as apples and berries. I recommend that you use the popular book *Sugar Busters* as a good guide for selecting foods that have a low glycemic index.

The amounts and types of fats you eat can also play a pivotal role in managing your weight. The kinds of fat that you need to avoid are the saturated fats (they come mainly from meat, dairy, and other animal sources and are solid at room temperature) and hydrogenated fats. The latter type of fat is a modern invention that allows unsaturated oils, for example, to be changed in a way that extends the shelf life of products made with them. Thus, hydrogenated vegetable oils have become ubiquitous in everything from margarine to cookies. Unfortunately, hydrogenated fats serve no beneficial functions in the body, and eating a diet high in hydrogenated and saturated fats reduces rather than extends human life. Eating more saturated fat is likely to make you gain weight even if you don't increase your total caloric intake. If you eat too much fat, you will continue to be hungry, and as a result you'll consume excessive amounts of calories. In fact, the epidemic of obesity in Westernized

countries stems to a great extent from increased fat consumption. Recent research has shown that high-fat diets are contributing to the high rate of obesity in American men.²⁸ Another study from Austria showed that three of four adults consume more than 30 percent of their total caloric intake in the form of animal fat.²⁹

Your body can adjust its metabolism when you eat proteins and carbohydrates. It cannot do this when you eat fat, however. When you increase your caloric intake of carbohydrates or proteins, your cells can speed up metabolism and burn up more of the excess calories, but your body has a poor ability to regulate fat balance.³⁰ Recent research that looked at energy and fat balance in hypothyroid animals fed a fat-rich or a low-fat diet showed that eating more fat resulted in a disproportionate gain in weight, even if the total number of calories is the same.³¹

Fat gets easily absorbed from your intestine, and much of it goes straight to the fat tissue for storage. If you reduce fat in your diet, you will lose weight even if you continue to consume the same amount of calories—research has shown that if you reduce your fat consumption by 10 percent, you will lose approximately ten pounds.³² In part this occurs because replacing fat with complex carbohydrates makes you lose more fat in the feces. If you adhere to a diet very low in animal fat, even if you eat what you want and as much as you want you will lose 5–10 percent of your starting body weight.

Restricting your consumption of fat is definitely a behavioral issue that you can work on. An effective strategy can be to keep foods rich in fat, especially animal fat, out of your home, so they're not available for you to snack on or cook with.

Gradually increase your protein intake from healthful sources. High-protein foods enhance your metabolism after meals and will give you a greater sense of satiety. You are more likely to stick to your weight management program on a long-term basis if you maintain a high-protein diet. Research has shown that consuming a high protein diet, without changing your carbohydrate intake, will produce a sustained decrease in your caloric intake.³³ A high-protein diet will have an anorectic effect, causing you to feel less hungry, and will help you lose weight if you also keep your intake of simple sugars down.

Always include in your diet monounsaturated fats. Substituting monounsaturated fats, such as olive oil, for saturated fats will make you lose weight even if you keep eating the same amounts of calories. Conjugated linoleic acid will also help you keep the weight off in the long haul.³⁴ Conjugated linoleic acid is a group of chemical forms of linoleic acid that you can get from eating more meat from ruminant animals such as beef, buffalo, and venison. Poultry, eggs, and dairy products, too, are rich in conjugated linoleic acid.

In essence, a modified Mediterranean diet that includes green vegetables, nuts, fish, meat, cereals, and olive oil will protect you from many chronic illnesses, will help you lose weight, and will prevent you from gaining weight.

Tips for a Successful Weight Management Program

1. Increase the frequency of your meals. This concept has been adopted in France, where people take the *goûter*, a small meal eaten in the afternoon. Research has shown that people who no longer eat the *goûter* had a significant increase in weight. Increasing the frequency of meals will promote lower insulin levels, improve insulin efficiency, and lower your cholesterol and triglycerides.³⁵ Try to split your energy intake into as many meals as your social life allows.
2. Pay attention to breakfast. Research has shown that if you have ready-to-eat cereal, cooked cereal, quick breads, or fruits and vegetables for breakfast, you will be less likely to have weight problems than if you skip breakfast or if you eat meat and eggs.³⁶ If you eat meat and eggs for breakfast, you will likely have a high daily energy intake. Also, skipping breakfast is not an effective way to manage weight. You will be haunted with hunger throughout the day, and you will end up eating more calories on a daily basis.
3. Be careful with drinks. Consuming liquids rich in carbohydrates promotes positive energy balance, simply because the energy that you get from drinks may escape the signaling process to the brain.³⁷ Milk has always been promoted as a healthy beverage; however, it may be rich in hormones and other proteins that can promote weight gain. You need to be careful with respect to the amount of milk that you consume. Alcoholic beverages also promote a positive energy balance. Avoid consuming high-fructose corn syrup, used in many soft drinks; this too can cause weight gain.³⁸
4. Try to control portion sizes. You may want to use packaged portion-controlled entrees. This results in a more significant weight loss, which will reduce your risk of cardiovascular disease.
5. Pay attention to what you eat when you dine out. A recent survey conducted in the United States has shown that we tend to eat out more often than in previous years.³⁹ Eating out promotes weight gain because of the type of food you end up eating—in restaurants you are more likely to consume high amounts of animal fat and simple sugars—and because restaurant portions tend to be large.
6. Increase your calcium intake. Animal research has shown that calcium affects metabolism of the fat cells. A high amount of calcium in your

diet lowers the level of parathyroid hormone, which will reduce calcium levels *inside* the cells. Low cell calcium levels make fat accumulation less likely and increase breakdown of fat. High calcium intake is more likely to be effective at speeding up your metabolism and making you lose weight when you also consume high amounts of branched-chain amino acids.⁴⁰ You can get branched-chain amino acids by eating more fish, grains, mushrooms, meats, vegetables, brown rice, beans, nuts, whole wheat, poultry, sesame seeds, dry whole lentils, liver, and chickpeas.

7. Increase your intake of omega 3-fatty acids. Research has shown that omega-3 fatty acids speed up your metabolism and have a protective effect against cardiovascular disease.⁴¹ (See Chapter 18 for more information on omega-3 fatty acids.)
8. Beware of the flavoring agent monosodium glutamate. This additive contains very high amounts of glutamate and is added to a wide range of foods these days. This substance has been shown to have a potentially damaging effect on the regulation of appetite at the level of the hypothalamus⁴² and is probably contributing to the epidemic of obesity in many countries.
9. Improve the way you manage stress. Stress has a twofold effect: it has a major impact on your leptin level and on the efficiency of leptin, and it also can cause impulsive eating. To help you overcome these effects, try a stress management program, such as yoga practice. This will help you lose weight and maintain the weight loss you have achieved.⁴³ At work, often a source of stress, try getting together with coworkers in a weight reduction program; for example, you could all have a bowl of healthful cereal for lunch.
10. Try a cognitive behavioral approach. Increasingly, weight program centers utilize this approach, focusing more on the psychological cost and the physiological health impact of weight problems rather than on weight loss per se. The thought that weight will have a detrimental effect on your health will motivate you to continue with the weight loss program. Research has shown that such cognitive behavioral programs promote weight loss, improve emotional well-being, and reduce the distress associated with dieting. They also encourage activity and fitness, and will improve the quality of your diet.⁴⁴
11. Take adequate amounts of vitamins and antioxidants. Several antioxidants are being touted for their ability to enhance metabolism and help you lose weight. No research, however, clearly demonstrates that antioxidants make you lose weight if you don't also exercise and eat a well-balanced diet, though antioxidants will prevent the accumulation

of free radicals that could slow your metabolism. Low zinc levels have been found in obese people, and some physicians have suggested using zinc in the treatment of obesity.⁴⁵

Chromium, an essential nutrient, makes insulin work more efficiently and will help you lose weight and keep the weight off. Research has shown that in a weight management program, obese men who took chromium lost 11.7 pounds, while men who did not take chromium lost only 6.1 pounds over a ten-year period.⁴⁶

Vitamin C status is inversely related to body mass. People who have adequate vitamin C intake burn 30 percent more fat during moderate exercise than individuals with low vitamin C status.⁴⁷ Thus, people who have vitamin C deficiency may have a harder time losing fat, even with dieting.

Finally, make sure you get adequate amounts of vitamin B₆, vanadium, vitamin E, alpha-lipoic acid, and coenzyme Q₁₀. These will help you get rid of free radicals, reduce inflammation in fat tissue, and ultimately help you lose weight by improving insulin and leptin efficiency. (See Chapter 19 for recommended daily intake of vitamins and antioxidants.)

Supplements, Herbs, and Medications for Weight Loss

Alternative medicine practitioners commonly recommend several herbs that may help you lose weight. Although well-conducted scientific research is lacking to prove that these herbs are effective for weight loss, many health professionals believe they work. The doses claimed to be effective for weight loss have not been standardized simply because no well-conducted studies have evaluated dose effectiveness. You also need to know that some of these herbs may be quite toxic when taken in excess of certain amounts. The following list gives you the best of the most popular ones.

COMMON NAME

St. John's wort

Gambooge

Yerba maté

Sand plantain

Asian ginseng

Aloe vera

Ivy gourd

Ginkgo

American ginseng

SCIENTIFIC NAME

Hypericum perforatum

Garcinia gummi-gutta

Ilex paraguariensis

Plantago psyllium

Panax ginseng

Aloe vera

Coccoloba grandis

Ginkgo biloba

Panax quinquefolium

Other supplements have been studied more extensively. Pyruvate, for instance, has a significant positive weight-loss-promoting effect. Besides conjugated linoleic acid, pyruvate has the best supporting evidence of efficacy.⁴⁸ Green tea speeds up metabolism, reduces fat formation, lowers the absorption of fat, and lowers triglyceride levels. Research has shown that high caffeine intake is associated with weight loss, as caffeine increases breakdown and oxidation of fat. A combination of green tea and caffeine improves weight loss.⁴⁹ Glucomannan, a dietary fiber supplement, can help you lose weight by giving you a sensation of fullness and making you feel less hungry. The usual recommended dose is 600 milligrams—1 gram taken with 8 ounces of water prior to a meal three times a day.

Spices such as annatto, cumin, oregano, sweet and hot paprika, rosemary, and saffron have some antioxidant properties. Some of these compounds may enhance metabolism.⁵⁰ You can take some of these herbs and natural substances as individual supplements or in a form of a well-balanced combination such as ThyroLife BodySlim. (For details, visit thyrolife.com.)

Women often struggle with a progressive midlife weight gain due to slowing of metabolism.⁵¹ If they have suffered from a thyroid imbalance, the slowing of metabolism is worse. If this is true for you, you may not be able to lose adequate amounts of weight even if you do a good job changing your nutritional habits. In this case, you may be able to achieve and maintain weight loss by taking a drug called metformin after meals. Research has shown that taking metformin in conjunction with dieting will result in long-lasting weight loss.⁵²

Doctors typically prescribe appetite suppressants only if a patient's body mass index (BMI) is higher than 30. The BMI, which gives doctors a measure of the severity of a weight problem, is calculated by a formula that factors in weight and height. A BMI score in the range of 20 to 26 is considered healthy. Medications used for obesity and weight problems have been approved mostly for short-term weight loss. However, sibutramine and orlistat have been approved for long-term weight management. Sibutramine enhances satiety, reduces fat intake, and facilitates the burning of calories through its effects on "brown" fat tissue, which is the kind of fat tissue designed to generate heat and regulate our body temperature, in contrast to white adipose tissue, which is designed to store calories. Sibutramine is a norepinephrine-serotonin reuptake inhibitor. Clinical research has found that two of three patients who take sibutramine lose more than 5 percent of their starting body weight.⁵³ Those who lose weight from the outset are those who are likely to keep the weight off if they continue the treatment. If you take sibutramine, you need to watch your blood pressure, as it may increase with this medication. Your heart rate may also speed up. You should not take sibutramine if

you have cardiac arrhythmias. Other side effects include dry mouth, lack of appetite, and insomnia.

The other medication that can help you lose weight is orlistat. It inhibits the enzymes that break down fat in the gastrointestinal tract, and so more of the fat you consume is excreted without being absorbed. If you are at high risk for cardiovascular disease, orlistat may be the medication of choice for weight loss. However, orlistat can lower the absorption of your thyroid medication from the gastrointestinal tract, and it can cause some gastrointestinal side effects such as diarrhea.

To manage food cravings, you may find it helpful to take 5-hydroxytryptophan (5-HTP), an amino acid that has begun to be sold as a nutritional supplement in the past few years. Also, drugs that affect 5-HTP in the body have been shown to diminish body weight by suppressing appetite; a new generation of 5-hydroxytryptophan 2C selective agonists is currently undergoing clinical trials.⁵⁴ As our knowledge of the intricate mechanisms that regulate appetite and metabolism expands, newer medications will become available to treat weight issues.

Weight problems related to thyroid imbalance are not a myth. Although the majority of people concerned about weight problems do not have thyroid disease, some people do have a thyroid imbalance that could either play a primary role or simply be a contributing factor. To win the weight battle, you need to have your thyroid imbalance properly regulated, but you also need to take care of your low mood and adhere to the mind-body program that I just outlined.

Weight, Polycystic Ovary Syndrome, and Thyroid Imbalance

Women who have an autoimmune thyroid condition and are struggling with a weight issue may have polycystic ovary syndrome (PCOS). PCOS is a quite common hormonal condition that is three to six times more common in patients with Hashimoto's thyroiditis, and low-grade hypothyroidism is five times more common in patients with PCOS.⁵⁵ PCOS affects 5–10 percent of women. (An equivalent syndrome occurs in men,⁵⁶ causing them to suffer from hair loss before the age of thirty, and to have insulin resistance and be more prone to becoming diabetic down the road.)

This condition often begins around puberty and continues even after menopause. In PCOS, excess male hormones disturb ovulation, causing infertility, and result in excess hair growth and irregular menstrual periods or loss of menstrual periods. Women with PCOS tend to have more regular cycles as they grow older. This happens because levels of male hormone decline with age.⁵⁷ However, even after menopause, testosterone may remain high,

which can promote a range of health problems, including cardiovascular disease and endometrial cancer.

Also, PCOS patients have insulin resistance. If you have PCOS, the more weight you gain, the more insulin resistance you have. Research has shown that the weight gain in PCOS is fundamentally due to an inefficiency of leptin in regulating satiety and in speeding up metabolism, so you eat more food yet burn fewer calories. If you also have an underactive thyroid, the weight problem worsens. The insulin inefficiency will make your insulin levels higher, and this will increase your risk of becoming diabetic. It has been estimated that 45 percent of women with PCOS have glucose intolerance, and 10 percent have type II diabetes.⁵⁸

The cause of PCOS is not quite clear, but it seems to be related to a disturbance in the regulation of chemicals in the hypothalamus that affect satiety and metabolism and the functioning of the signals that regulate the ovaries. Your genes have something to do with these disturbances; in fact, research has shown that sisters of PCOS patients have higher male hormone levels, without necessarily suffering from the syndrome.⁵⁹ In addition, environmental factors, particularly nutrition, contribute to the occurrence of PCOS. If you are overweight or obese, you will become insulin-resistant, and this can produce metabolic and hormonal changes that make the development of PCOS more likely.

If you have PCOS, you are not only prone to having a thyroid imbalance but also genetically predisposed to suffer from depression or bipolar disorder. Recent research has shown that 28 percent of patients with PCOS also suffer from a bipolar disorder.⁶⁰ As explained in Chapter 6, if you have a bipolar disorder, you may be already struggling with weight gain as a result of how much you eat and what you eat. The medications you take for the mood disorder can also promote weight gain. You can imagine the consequences for your weight if you are suffering from the triple threat of thyroid imbalance, PCOS, and bipolar disorder.

Losing weight is the most important component in the treatment of polycystic ovary syndrome. When you lose weight, your periods may become regular, your excess hair growth may go away, and infertility problems may disappear. You need to adhere to the weight management program that I recommend for thyroid patients. The low-glycemic-load diet will both help you lose weight and treat all the symptoms of PCOS listed above.⁶¹ Reducing simple sugars in your diet is one of the most important ways to deal with polycystic ovary syndrome. This program will also prevent you from having type II diabetes down the road.

You also need to supplement your diet with chromium at a dose of 200 micrograms a day to improve insulin resistance, and take adequate amounts

of vitamins and antioxidants to speed up weight loss and keep the weight off. Birth control pills will help regulate your menstrual cycle. Yasmin, a low-estrogen birth control pill, has become quite popular in the treatment of PCOS. It will improve acne and will help reduce the level of male hormones.

Metformin, a medication used for diabetes, improves insulin efficiency and will make leptin levels go down, indicating that leptin has become more efficient. It will also normalize menstrual irregularities and promote normal ovulation, possibly restoring fertility.⁶² Other drugs that improve insulin efficiency, such as rosiglitazone and troglitazone, are also useful in regulating menstrual cycles and ovulation but have less of a beneficial effect on male hormone levels. Metformin, at a dose of 500 milligrams three times daily, also improves growth hormone secretion, which may be impaired in PCOS patients (possibly as a result of the excess weight).

Orlistat too has been shown to be beneficial in improving features of polycystic ovary syndrome, as it lowers testosterone. The appetite suppressant sibutramine improves insulin sensitivity and will help you lose weight and keep the weight off. It will make you eat less and burn more calories. This will reduce the surplus of male hormones, thus ameliorating the clinical and metabolic changes associated with the syndrome. Sibutramine can also reduce cardiovascular risk if you are overweight. However, do not expect that just taking metformin or sibutramine will make you lose weight and will regulate your menstrual periods. You need to adhere to a diet that emphasizes low-glycemic-index foods, low fat consumption, and high protein intake.

Clomiphene is used to induce ovulation in PCOS patients but often is not sufficient when used alone; metformin enhances the effect of clomiphene. Your doctor may also prescribe antiandrogens, such as flutamide, which is a medication that blocks the effect of male hormones and is quite effective in treating excess hair growth. It can also improve or normalize ovulation.

If you have polycystic ovary syndrome, you could have an elevated level of prolactin, a hormone produced by the pituitary gland. High prolactin not only can cause a milky discharge from the breast but can impair ovulation and cause infertility. If your prolactin is high, you may benefit from bromocriptine or cabergoline, medications used to lower prolactin. This will improve your chances of becoming pregnant.

Important Points to Remember

- Thyroid imbalances can cause weight gain or loss by changing body metabolism, by altering dietary and lifestyle factors, and by promoting depression and lowering self-esteem.

- Thyroid hormone interacts in the brain and body with some of the same biochemicals that play key roles in eating behavior, including beta-endorphin, GABA, noradrenaline, leptin, and serotonin.
- Some of the physical effects of hypothyroidism—such as tiredness, muscle weakness, shortness of breath, and depression—can derail plans for regular exercise and thereby contribute to rapid and significant weight gain.
- After a thyroid imbalance has been corrected, you may continue to struggle with weight problems. It is important to follow a healthy, low-glycemic-load, low-saturated-fat, high-complex-carbohydrate diet. Get plenty of exercise, and arrange for support from your doctor and family to maintain proper weight.
- Make sure you are taking the right amounts of vitamins and antioxidants that will help you with the weight.

8

HORMONES OF DESIRE

The Thyroid and Your Sex Life

When I began my career in the thyroid field, it never crossed my mind that I would play the role of marriage counselor. Most of the time when patients have marital or sexual difficulties as a result of a thyroid imbalance, I refer them to a couples therapist or a sex therapist. Yet sex therapy or couple therapy may not be successful unless I take the initiative to counsel the patient and explain the effects of thyroid imbalance on sexual function.

Both hypothyroid and hyperthyroid patients experience changes in their sexuality. Some of the examples discussed in this chapter can shed light on important aspects of how the thyroid affects sexual desire and activity.

Beatrice and Leonard had been married for almost fifteen years and had a daughter. The CEO of a large company, Leonard was quite successful, and the family was wealthy. During most of their marriage, they had a happy, stable relationship. All this changed rather suddenly.

Beatrice's gynecologist referred her to me because he had noted a goiter and a tremor in her hands. In my first encounter with Beatrice, I established that she had an overactive thyroid due to Graves' disease, and I started her on treatment. A few days later, I received a call from Leonard, who wanted to discuss some issues with me. He told me his wife had been unfaithful in recent months, and because of this, he was planning to divorce her. He was wondering if by any chance there was a connection between her thyroid condition, hormones, and the changes in personality and sexual desire his wife had experienced during the past year.

At her husband's request, Beatrice returned to my office to explain the situation from her viewpoint. She said:

We got married when I was twenty-five years old. I loved Leonard and was attracted to him, but from the very beginning, I was not all that interested in sex.

Even before the marriage, I never really understood what the big deal was about sex. In fact, if I had any problem with my husband, it was because for years I was not very interested in sex. I'm sure that after our child was born, what little of me had been there for him was probably totally taken away. I had a lot of guilt feelings about not being a good wife sexually all the time.

Beatrice recalled that, the previous summer, she had started losing weight, feeling hot, sweating, and at times feeling shaky. Then, gradually, she became more and more interested in having sex with her husband. She said:

Definitely once in the morning, definitely at night before bed, and almost always in the middle of the night. At least three times a day and, if the opportunity arose, four times a day. This was in addition to when I was by myself. It became a constant thing on my mind.

I began to log on to our computer and go into chat rooms on the Internet. At that point, I wasn't thinking I was going to get involved with somebody or experience sexual fantasies, but later I was totally consumed by the possibility of sex. It got to the point where I couldn't wait for my husband to leave the house so I could get on the computer. It would annoy me when he wouldn't leave when he was supposed to.

I was sexually stimulated most of the time. This happened when I was on-line pretty much throughout the day. Most definitely when I was with my husband it happened. I masturbated while talking with people on the computer. In turn, they masturbated when I was talking to them. That whole sick thing went on for a few months.

During the same period of time that all this was going on, my husband and I were partying, drinking, and dancing all the time. I just had energy constantly. I started becoming more aware of myself, more aware of everybody else, and wanting to get out and do things. I was paying less attention to my daughter.

The constant sexual obsessions and the manic behavior led Beatrice to have an affair that almost destroyed her family. One of the men to whom she had been talking on the computer decided to meet her. She described the encounter as follows:

I had talked to him for a number of months on the computer and also on the phone. I told Leonard I was going to spend the night with my cousin. The affair lasted one night, but Leonard found out almost immediately. How come other people can have affairs their whole lives and never get caught while I'm good as gold for fifteen years and get caught from having a one-night stand? Probably Leonard was already suspicious because of my behavior over a period of time. He confronted me about the episode, and I couldn't lie. I said yes, and everything went downhill from there.

Leonard became totally depressed and unsure of himself. Our relationship

became like a roller coaster. We'd be okay for a day or two, and then he'd give me a zinger or we'd get into an argument. We started seeing a counselor, but that didn't seem to be helping at all.

After my interview with Beatrice, Leonard called me on the phone. He confirmed that his wife's infidelity had affected him tremendously, and he was having difficulty coping with it. I explained to Leonard that what he and his wife had experienced could be the result of hyperthyroidism's effect on the functioning of the brain. The total transformation of Beatrice's personality—from a fairly nonsexual, stable, supportive, and loving wife and mother to a self-centered person obsessed with sexual thoughts—was due to chemical changes in the brain that were making her a different person.

Although he found my explanations comforting, Leonard remained somewhat skeptical. His doubts persisted even though Beatrice returned to her previous self two to three months later when medication helped correct her hyperthyroidism. She stopped having the sexual fantasies and chatting with strangers on the computer. Beatrice herself could hardly believe that she had really been doing these things. In a subsequent conversation with Leonard, I dissuaded him from thinking that hyperthyroidism had unmasked Beatrice's "true" personality. Hyperthyroidism did not unmask hidden desires and hidden personality. It triggered and changed feelings, drives, and perceptions. Thyroid dysfunction altered the most intimate aspects of Beatrice's life, as it has with many other people.

Thyroid disease can precipitate or contribute to significant sexual problems, which are often a source of frustration between couples and can lead to the deterioration of relationships. Such problems aggravate the emotional chaos that both partners feel when one suffers from a thyroid condition.

Most patients with thyroid disease do not discuss their most intimate acts with their physicians and seldom bring up sexual disturbances, except sometimes to refer vaguely to "changes in my sex life." Sexual issues remain hidden and unexplained, yet they can be responsible for distancing and significant marital problems. Physicians seldom inquire about the sexual difficulties that thyroid patients may be experiencing, nor do they provide explanations or counseling. People who experience sexual difficulties often hide them and do not attribute them to the thyroid disease. In extreme cases, when sexual dysfunction weighs on the relationship and becomes a source of conflict between two partners, the couple may seek psychological counseling. Some people may even seek help from a sex therapist. Yet, for the majority of thyroid patients who experience sexual dysfunction, neither psychotherapy nor sex therapy will help unless the thyroid imbalance has been corrected and both the therapist and the partner have a good understanding of the thyroid disorder and its effects.

How Thyroid Function Governs Sexuality

In the sex act, there are four steps or stages that normally lead to sexual fulfillment or orgasm, each of which is affected by thyroid function. A sexual thought, a touch, or a signal that our brain interprets as erotic causes certain parts of the brain to emit chemical transmitters. These transmitters generate a surge of sexual interest and fantasies, making us willing to become intimate. Brain chemistry stimulates the autonomic nervous system, which will make us experience a range of physical responses: the skin becomes more sensitive, breathing and heart rate become more rapid, blood rushes to the genital organs, and so forth. This phase of excitement (or readiness) varies in duration from one person to another. As stimulation continues, the physical responses generated by the autonomic nervous system intensify, causing lubrication and engorgement of the external genital organs in women. The vaginal opening narrows, the labia swell, and the clitoris pulls in and becomes close to the pubic bone. In men, the autonomic responses cause an erection due to engorgement of the penis with blood.

The brain chemistry involved in sexual arousal and excitement is affected by the level of thyroid hormones. They promote the pleasurable body-mind response that culminates in orgasm. At the time of climax, the brain increases the release into the bloodstream of the hormone oxytocin, which causes the involuntary rhythmic contractions of muscles in the genitals, anus, and uterus. These orgasmic contractions depend on normal thyroid hormone levels. After we reach orgasm, we experience a period of relaxation. In women, the resolution of the lubrication and engorgement may take several hours, whereas in men, the resolution of the engorgement and return of the penis to a flaccid condition occurs almost immediately after ejaculation.

Women tend to suffer from sexual dysfunction more often than men. Research has shown that 40–45 percent of women and 20–30 percent of men suffer from sexual dysfunction.¹ Low libido (lack of desire and loss of sexual fantasies), called hypoactive sexual desire syndrome, is the most common form of sexual dysfunction among women. According to a study conducted in Switzerland, one of two women suffering from sexual dysfunction has lack or loss of sexual desire, and one of ten has an issue with reaching an orgasm.² Sexual dysfunction causes significant personal distress and promotes major interpersonal problems. Any kind of sexual dysfunction among women has several roots and includes both physiological and psychological reasons.³ You are more likely to suffer from hypoactive sexual desire syndrome if you are not satisfied at work, if you have relationship problems, if you have a medical condition, or if you feel that your partner has low libido and does not reach a climax. You may also suffer from hypoactive sexual desire syndrome because of abnormal hormone levels or as a result of taking certain medications.⁴

Women's sexual problems often arise from the differences that exist between men and women with respect to thinking and feeling.⁵ Generally speaking, men focus on sexual intercourse, but women can be satisfied with just the emotional affection associated with sex. Typically, when a woman loses interest and desire in sex, the couple often stops having intercourse. A woman also does not want to have sex if she suffers from pain during intercourse. Wanting to have intercourse, for women, is more linked to the affection that she has for her partner and to the anticipated physical and—equally important—mental and emotional satisfaction experienced during intercourse. In essence, men and women have different ways of thinking about sex.

Because of this high vulnerability to sexual dysfunction, women's sexuality becomes easily impaired at all levels if they have a thyroid imbalance. In patients with this condition, depression makes sexual dysfunction worse. This often explains why women with thyroid imbalance may continue to suffer sexual difficulties even after the imbalance has been corrected with treatment. Another reason why a woman may continue to have low libido is hyperprolactinemia—an excess of prolactin, the pituitary hormone that regulates lactation. High prolactin can be caused by an underactive thyroid, by medications, or by a pituitary dysfunction. Recent research has shown that 88 percent of patients with hyperprolactinemia have sexual dysfunction. High prolactin level in women impairs all phases of female sexual function, including libido and orgasm.⁶ Women with high prolactin also have problems with arousal, lubrication, and satisfaction with sex. The higher the prolactin level, the more severe the dysfunctions.

Thyroid hormone not only has a direct effect on the brain chemistry interactions that lead to the autonomic nervous responses of sexual arousal and fulfillment; it also has an effect on the levels of sex hormones. In women, hypothyroidism lowers estrogen and progesterone levels and can contribute to a cessation of ovulation.⁷ The lack of estrogen has significant peripheral effects, not only on the brain but also on the lubrication of genital organs.⁸ Low thyroid makes the ovaries produce less testosterone as well. In a hyperthyroid woman, testosterone levels are higher; and estrogen levels may remain normal or decrease.⁹ Thyroid hormone excess may enhance libido in some women because of the increase in androgen levels coupled with the direct effects on brain chemistry. In fact, this same increase in androgen can cause acne, growth of facial hair, and loss of scalp hair due to a shortening of the life of the hair follicle.¹⁰ In men, hypothyroidism often causes a decrease in the testosterone level.¹¹ Treatment with radioactive iodine in men is another cause of lower testosterone levels. Low testosterone in men causes the levels of some forms of female hormone to become higher than normal.¹²

The various effects of thyroid hormone on the brain, on the autonomic

nervous system, and on sex hormone levels account for the multiple sexual disturbances that thyroid patients often experience. Because thyroid imbalance is much more common in women than men, and its effects on sexual function are quite often more complex, I will focus primarily on women's sexual problems in this chapter.

Hypothyroidism and Low Sexual Energy

When a woman becomes hypothyroid, the decrease in estrogen levels and the effect on the brain of low thyroid hormone levels often lead to lack of interest in sex. Desire gradually declines and may ultimately vanish. The healthy fantasies that existed prior to the occurrence of hypothyroidism occur less and less often. Most hypothyroid women have a tendency to masturbate less than they used to, again reflecting the evaporation of the sex drive. A woman may not wish to be intimate with her partner or with anyone else.

The frustrations related to sexual dysfunction that hypothyroid women experience stem from an inability to cope with the changes. The effect on self-esteem and the fact that the women may not understand the reason for the changes tend to exacerbate these frustrations. An additional frustration, which may preoccupy women more than the dysfunction itself, is the need to deal with unsatisfied partners. Whereas one male partner may feel rejected and no longer desired, another may be understanding (or at least give the impression that he is). The woman may reassure him that her problem "has nothing to do with him" and that she "is working on it." The hypothyroid woman who describes this situation to her gynecologist may be given estrogen to improve the sexual dysfunction, often to no avail. A friend may advise the woman that, to reduce the conflict with her partner, she should just have sex when her partner wants, regardless of whether she is in the mood. Often, however, if a woman isn't aroused, she simply doesn't want to bother with sex.

A good example of this problem is Olivia, who was hypothyroid for at least a couple of years. She told me, "When I was hypothyroid, I didn't want anybody near me." Another hypothyroid woman said, "You need more sleep, your hair is falling out, and you have no sexual drive, which is abnormal for a young married woman. Watching something erotic on TV doesn't do anything for you. You know something is wrong. You don't want to be bothered or touched. You may think to yourself, 'I know it's my problem. I don't want to tell him no. That's not right for him.'"

Another factor contributing to sexual problems is that a hypothyroid woman is often exhausted. As soon as she comes home from work, she wants to rest and sleep. "I feel miserable," said Anne, who had just been diagnosed with hypothyroidism. "I'm tired. I don't feel good. My body aches. Being

intimate is the last thing in the world I want. I want somebody to give me a massage and let me sleep."

Weight gain may lead to a decline in self-esteem and distorted perceptions of body image, further contributing to marked decreases in sexual activity. Melanie had been married for only two years when, as a result of hypothyroidism, she reached the point of seeking excuses not to have sex with her husband. She was quite affected, as are many hypothyroid patients, by her physical appearance. She said, "It is hard to feel sexy about yourself when you look like a toad, you gain all this weight, and you are all bloated. The physical part of it is very detrimental to your psyche. It gets in the way of even being able to enjoy yourself or put yourself in that position."

When a hypothyroid woman engages in a sex act just because she wants to please her partner, some sexual arousal may occur, but she may have difficulty reaching a normal state of sexual excitement. A woman who, during foreplay, normally reaches an excitement plateau within ten to twenty minutes may not reach that level when she is hypothyroid even after an hour of foreplay. Many hypothyroid women will continue to work at it, but because they are exhausted and have not reached an adequate level of arousal after such a long period of foreplay, they often give up and interrupt the sex act.

Nicole, who was suffering symptoms of hypothyroidism when she first came to my office, described this problem to me in the following way:

I have never been a really highly sexed person: sex once every week or two was fine with me. In the early years of marriage, we engaged in sex more. Then it was kids and mellowing, so it was probably about once a week. In the last year, I have had no interest. I don't really miss it or need it. We probably have sex maybe once every two months. It has taken longer to stimulate me. Sometimes I even think, "Are you up for all this?" It takes longer, and it's more work.

Because thyroid hormones are crucial for the response that women need in order to achieve engorgement of the clitoris and lubrication of the vagina, they may not achieve this state in a normal sex act. The vaginal dryness in particular may cause women to experience pain during sexual intercourse. So in addition to the lack of desire, the pain then becomes another reason for avoiding sex. Fear of pain may also become a source of anxiety, which prevents the woman from relaxing enough to enjoy sex. The pain and the lack of pleasure during intercourse become a significant burden in the mind of a hypothyroid woman, and she often prefers to avoid sexual contact. Women who continue to be sexually active at the insistence of their partners often fail to achieve an orgasm, and if they do, it is short-lived. Multiple orgasms are unlikely, even if they were common before hypothyroidism.

According to a young woman being treated for an underactive thyroid:

Sex is not enjoyable any longer. The dryness in the vagina and the severe pain during intercourse make it a horrible experience. When my thyroid has been under control, I have felt sexier. I have actually desired sex. The pain during intercourse disappeared. When my thyroid is not under control, when it is too low, that is the last thing on my mind. Then sex is like work, and it causes great discomfort.

Many couples face similar problems. Painful intercourse can be a frustrating barrier to a gratifying sex life. Surveys have shown that 15 to 30 percent of all women experience physical discomfort or pain when they engage in sex.¹³ Causes may include superabsorbent tampons, allergic reactions to contraceptive foams or creams, and vaginal infections. Often when a gynecologist finds no obvious vaginal or abdominal abnormality, he or she may merely suggest psychotherapy. Yet the problem has several possible causes, including thyroid imbalance leading to inadequate arousal and lubrication.

Pain or discomfort during intercourse may also be due to lichen sclerosus, an inflammation of the genital skin that can cause extreme itchiness. One doctor reported that nearly 50 percent of women suffering from this skin condition have a thyroid disorder.¹⁴ Lichen sclerosus is treated with hydrocortisone ointment or 2 percent testosterone ointment twice a day for two to three months.

Lichen sclerosus appears as a patchy white lesion on the labial skin (outside the vagina). This lesion at times extends to the area between the legs and up to the anus. If you continue to have discomfort and pain during intercourse after your thyroid imbalance has been corrected with treatment, have your gynecologist look for lichen sclerosus. Another often overlooked reason for the dryness is Sjögren's syndrome, an autoimmune condition that occurs in a large number of thyroid patients, resulting in dryness of the eyes, mouth, and vagina (see Chapter 14).

When Depression Aggravates the Problem

When women are depressed and hypothyroid, they lose any interest in sex and may even develop an aversion to it. Although these women may experience an improvement in many of their symptoms with thyroid hormone treatment, the lack of sexual desire may persist. One patient who continued to have residual depression after correction of hypothyroidism told me, "Since I increased the dose, I don't think I have more arousal. I'm more energetic and less tired. I sleep less. The PMS symptoms are less. I feel less impatient.

But when it comes to desiring sex, this has not changed. I still don't have any interest." When a lack of sexual desire persists, it may be due to depression or to a distancing that has developed between the two partners over a period of time.

Dana, age twenty-eight, who has suffered lingering effects of thyroid imbalance, told me, "Before all this, I remember having the desire to have sex, and we were very active sexually. Now the desire has pretty much gone away, even when I am on the thyroid medication. I do have desire, but it's very seldom and not like it used to be. I like to be with my husband and talk to him. Mainly I want *just* to be close to him without the sex."

The struggle to maintain a loving, caring relationship is common among patients suffering from hypothyroidism. The husband may not understand that although his wife has lost her desire to engage in sex, she still loves him. If her husband is supportive, the woman may attempt to please him, quite often to no avail. Relationships can be seriously disturbed, however, by the sexual dysfunction resulting from thyroid-related lingering depression.

Raging Libido and Other Sexual Problems of Hyperthyroid Women

The effects of hyperthyroidism on sex life are more complex and varied. Many hyperthyroid women respond in the same manner as hypothyroid women: they gradually lose interest in sex, both because they are overwhelmed by their chaotic thoughts and because of the indifference to pleasure so characteristic of depression. Some hyperthyroid women may experience greater depression, and the accompanying physical exhaustion and tiredness may cause them to lose interest in sex.

I saw Robin for the first time when she was referred to me for hyperthyroidism. She had been married for three years and had just recently become separated from her husband, who had filed for a divorce. She said:

I had noticed a loss in my sex drive. That was the first thing that happened to me. We had been married for six months, and it was just great. We had great sex. Then, all of a sudden, I had no interest. It took forever to excite me. I would still be able to get excited once I had allowed myself to relax completely. My husband thought that I didn't love him anymore! I tried to explain it wasn't that. I told him I wasn't interested in anybody else. I just had lost the desire. He couldn't understand why, and I couldn't tell him why.

Her husband hired a private investigator, who followed Robin for a month. When the investigator came up with nothing, Robin's husband gave up. Then he met a woman who could give him what he wanted. For months,

Robin continued to feel guilty that she hadn't been able to control what was happening to her sexually. Later, when Robin's overactive thyroid was corrected, it took months of counseling and psychotherapy for her to regain a normal sex life.

Julia, another young woman who became hyperthyroid in her first year of marriage, said:

I think my lack of interest in sex was tied in with the exhaustion. The sexual interest started going when I began having many other symptoms of hyperthyroidism. I would have liked to have somebody else to talk to, especially some other person who had gone through it. When I was diagnosed, my doctor was quite open with me and told me everything that could possibly go wrong except for the sexual effects.

The increased anxiety and mood swings of a hyperthyroid woman often create a distance between her and her partner, and this may cause her to avoid intimacy. Her moodiness and self-esteem problems make communication and focus difficult. She may think about sex and be interested, and she may experience a burst of fantasies and sexual desire, but these feelings can dissipate quickly in a wave of anxiety.

Many hyperthyroid women, however, do not lose their sex drive. Their excitement period is unaffected or may even be shortened. It takes less time for them to achieve a state of lubrication and engorgement, but during sexual intercourse, they may experience tremendous pain, similar to what hypothyroid women would experience. At times, the pain is caused by an involuntary spasm of the outer part of the vagina (vaginismus). The fear of having pain during sexual intercourse may create significant anxiety in hyperthyroid women, who may then attempt to avoid sexual intercourse altogether.

Some women with an overactive thyroid experience too much vaginal lubrication, even before they start showing symptoms of hypomania and raging libido. This happened to Alexandra, who could not understand why she was experiencing excessive lubrication, even during the day, and initially thought she had a yeast infection. She said:

I called my gynecologist and told him that I had an excessive amount of mucus, even in the daytime, and I didn't understand it. He did a Pap smear and said everything was clear. I was worried about infections, and he said because it was a clear mucus, nothing was wrong. At that time, I became wet very quickly. To reach an orgasm, however, it took longer. It was fine for me, but it was very stressful for my husband.

Thyroid hormone excess may have a direct effect on the brain chemicals that regulate sexual interest. As I illustrated at the start of the chapter,

hyperthyroidism can cause a hypomanic state and increased sexuality in women. Karen, a thirty-eight-year-old housewife who experienced a sudden surge in her sexual interest and fantasies after several years of marriage, told me:

I became extremely involved in my appearance. I was overweight at that point. I began having sexual fantasies. I started reading books that were more erotic. It seemed to happen rather suddenly. I spent hours reading erotic books and lying down fantasizing. My fantasies didn't involve my husband and not even any men I knew, really, just fantasy people—strangers.

At that time, I was home and not working. I engaged in masturbation several times a day. I started having dreams that I was developing relationships with men that I saw on talk shows on TV. I was also experiencing other symptoms of hyperthyroidism. I had a rapid heartbeat, I was feeling hot, and at times, I was shaky. I was talking faster and definitely talking louder.

This hypomanic state induced by thyroid hormone excess is similar to what can be seen in manic-depressive disorders during the elated phase, when a woman may typically seek more sex and become obsessed with sexual thoughts. Increased sexuality rarely occurs without other manifestations of elation. Women become more interested in their bodies and appearance. They may spend unusual amounts of money on new, extravagant clothes and often plan or even decide to have plastic surgery.

Sexual Problems in Men

As I said at the start of the chapter, thyroid imbalance is much more common in women than in men, and its effect on women's sexual function is quite often more complex. Yet men suffering from thyroid imbalance may also experience drastic changes in sexual activity. Hypothyroid men often experience a lack of desire and a blunting of fantasies. Even if they are excited or stimulated, erection may not occur. If the hypothyroidism is severe, the erection may be transient, causing an interruption of the sex act. As in women, the tiredness and depression make men disinterested in sex and unable to fulfill their partner's sexual needs.

A hyperthyroid man loses the patience to engage in foreplay to excite his partner. He may become obsessed with the physical act and may not allow his partner to reach an adequate level of excitement before intercourse. One wife of a hyperthyroid man complained:

It was boom, and it was over with. Before, we would engage in a lot of foreplay, and afterward we'd sit in bed and talk for hours. Then, for several months when John was hyperthyroid, he wanted to have sex almost every day. After maybe

one or two minutes of kissing, he would just like to have intercourse. I was not ready. It was frustrating, and I could not refuse. I got angry so quickly.

Hyperthyroid men may also lose the emotional aspect of making love. Sex becomes just a physical activity. Both Richard and his wife noticed a change in his sexuality. Richard said:

At the beginning, sex was something very important—and it wasn't just sex, it was making love, and there is a difference! Then later, sex became just sex. There was a period when we just stopped. Before, we would have sex two or three times a week, and it got to maybe once every three weeks. Later on, the desire just went away. The amazing thing about Graves' disease is that it makes you emotionally bland to everything around you. You have so much energy that you feel you need to be doing something physical all the time.

Other men become sexually interested in the morning, but in the evening, they are physically exhausted and have neither the desire nor the physical strength to perform sexually. As one man said, "In the morning, I would be Superman. By the time I get to bed, I am so tired!"

Hyperthyroid men also lose their normal orgasms. One hyperthyroid man said:

Before, sex lasted a lot longer and maybe even more than one time. Now it is only one time and sometimes not even that. With Graves' disease, you're going at 100 percent of what you should be, and all of a sudden, you're at minus 20 percent. You're so exhausted. Anytime between eight and ten in the evening, you crash. It is like you expended all the energy you had, and then you are left with nothing.

Toward a Better Sex Life

Theoretically, once a woman's thyroid imbalance is corrected, her lack of interest in sex and avoidance of it should subside and her fantasies and usual drive should return. Unfortunately, this may not always be the case. Patients may believe that the change in their sex life is due to reasons other than the thyroid. Some attribute it to age, and others remain perplexed by their loss of sexual interest. As I noted in Chapter 2, a thyroid imbalance can be a significant stressful condition. Some women may continue to suffer from depression or post-traumatic stress syndrome after the imbalance is corrected. Depression and post-traumatic stress syndrome could in themselves cause a lack of sexual interest. Once distance has come between two partners, they may find it hard to resume their lives as if nothing had happened. The continued lack of interest may also become a challenge to intimacy.

One of the simplest ways to improve your sexual relationship with your partner and to reignite it after having had sexual problems related to thyroid dysfunction is to engage in more casual conversation with your partner. This will enhance affection. Also initiate more physical contact without actually thinking about sex. You and your partner should begin to learn to enjoy slow sex, such as pillow talk.

You need to practice regular sessions of stimulation and caressing—at first without actually engaging in intercourse. Some of these techniques are described in books such as *The Gift of Sex: A Guide to Sexual Fulfillment*.¹⁵ Have your partner rediscover your erogenous zones. You need to train your brain to respond to the stimulation that elicits arousal and excitement.

If sexual problems and symptoms of depression persist after correction of your hypothyroidism, consider changing your thyroxine treatment to a combination of T4 and T3 (see Chapter 17). This has helped many women with persistent depression and lack of sexual interest. If you are also taking an antidepressant, ask your doctor whether this medication could be the source of the sexual difficulties.

Sexual dysfunction caused by an antidepressant often alters your self-esteem, your mood, and your relationship with your sex partner. Sexual dysfunction occurs in 30–50 percent or more of people who take SSRIs for depression.¹⁶ What causes the sexual dysfunction is the low dopamine associated with high serotonin, inhibition of nitric oxide, and sometimes high prolactin level. If you have sexual dysfunction caused by an antidepressant, you may need to have the dose of antidepressant lowered. Stopping the antidepressant for a short period of time may also work. Discuss with your doctor the possibility of switching to another antidepressant, such as nefazodone or bupropion. These two antidepressants do not cause loss of libido; in fact, bupropion can enhance your desire to engage in sex. Adding bupropion to another antidepressant may be the antidote for the sexual adverse effects related to the first antidepressant.¹⁷

Men with sexual difficulties caused by an antidepressant can be helped by taking yohimbine (Yocon). This medication works on the venous system in the penis to induce and maintain an erection.

Menopause makes women more likely to suffer from hypoactive sexual desire syndrome. The lack of estrogens impairs their sexual thought process. Treatment with estrogen/progestin can increase sexual desire in premenopausal or postmenopausal women by giving them a better sense of well-being. Testosterone treatment, even in small amounts, has a more clear-cut effect. It improves sexual desire, arousal, and sexual satisfaction whether a woman is premenopausal or postmenopausal. It helps with depression, headaches, and loss of energy.¹⁸ It also decreases the distress level in menopausal women. However, testosterone treatment can promote hair growth in

some women. Estratest, a hormonal preparation that combines estrogen and a small amount of testosterone, is a popular treatment for menopausal women with persistent sexual difficulties. For many women, a testosterone patch may be a better option.¹⁹ However, testosterone may not help with your hypoactive sexual desire syndrome if you continue to suffer from depression or relationship problems. Whether the use of testosterone for long periods of time causes any adverse effects has not been extensively studied. If you suffer from an arousal problem but have normal desire, sildenafil can help.²⁰ You may also benefit from taking DHEA, which can improve your mood and sexuality.

If you have vaginal dryness due to lack of estrogens, you may want to consider one of the estrogenic intravaginal preparations in the form of cream, pessaries, tablets (such as Vagifem), and estradiol-releasing vaginal rings. Creams, rings, and tablets provide better results with vaginal dryness compared to nonhormonal gels.²¹ I discourage you from using a cream made of conjugated equine estrogens. It can promote uterine bleeding, breast tenderness, and pelvic pain. The vaginal ring, however, not only is easy to use but will give you excellent results without causing discomfort.

Some couples who have experienced distancing and continue to suffer from lingering sexual problems after a thyroid hormone imbalance has been corrected may find it helpful to consult a psychotherapist or sex therapist. To obtain a list of sex therapists, contact:

**American Association of Sexuality Educators,
Counselors, and Therapists (AASECT)**
P.O. Box 1960
Ashland, VA 23005-1960
Phone: 804-752-0026
Website: www.aasect.org

The sexual effects of thyroid imbalance described in this chapter are very common. In many couples, they are the main cause of relationship problems. In other couples, they are catalysts for relationship problems that are triggered by changes in the behavior and personality of the thyroid patient. This is one of the many facets of the big question, "Is it my brain, or is it my thyroid?" Thyroid patients and their partners must resolve this issue themselves or seek help from a sex therapist if the problem continues after the thyroid imbalance is corrected.

Important Points to Remember

- Optimal thyroid hormone levels are crucial for having normal libido and normal physical responses that lead to sexual fulfillment.

- An overactive thyroid can cause painful intercourse and a loss of interest in sex, or it can result in raging libido and careless behavior.
- An underactive thyroid often results in blunted sexual appetite, lack of lubrication, and painful sex.
- Sexual problems can continue after correction of a thyroid imbalance. You and your partner need to learn about these effects, discuss them openly, and seek help from a sex therapist if psychological problems and distancing persist.

9

“YOU’VE CHANGED”

When the Thyroid and Relationships Collide

Women and men are fundamentally different in how they communicate and interpret each other’s language, behavior, and emotions.¹ Many couples come to recognize their real differences, accept them, and eventually learn to deal with them.

The intrusion of a thyroid imbalance into a couple’s relationship very often exacerbates these differences. Subtle changes in how the afflicted person speaks and acts alter the dynamics of the relationship. Thyroid patients, particularly those suffering from an overactive thyroid, often become moody, anxious, angry, and irritable.² And many begin to have a distorted perception of their partner’s behavior. Unfortunately, their partners may not understand what causes these changes. Inability to cope with changing demands and difficulty in communicating can lead to chaos, with misunderstandings, false expectations, and arguments over trivial matters. For many people, the relationship becomes a burden.

People with a thyroid condition are having terrible trouble understanding themselves and their new, confusing feelings, so they are unlikely to understand their partners. Indeed, thyroid patients are so overwhelmed by their new emotional problems that they cannot cope properly with the stress of the relationship, which becomes a cycle of reactions and counterreactions. Both partners then share the mental stress provoked by the thyroid condition.

Typically, when one of the partners is suffering from thyroid disease, the relationship undergoes two distinct phases, each characterized by its own distinct dynamics and thyroid-related effects. The first phase begins with the intrusion of the thyroid condition and ends when the diagnosis is made. In this phase, relationships frequently deteriorate and may even end because of the lack of understanding of what precipitated or caused the relationship problems. The second phase follows diagnosis.

In phase one, the intrusion is, in most instances, insidious. More often than not, the personality of the afflicted person changes drastically. Although people with thyroid conditions are capable of hiding their suffering to some extent, the disease quickly alters their behavior and language so significantly that other people easily recognize the change. As long as the cause of the change remains undetermined (that is, the thyroid condition has not yet been diagnosed), the couple will be unable to pinpoint the origin of their problems. The relationship suffers proportionately to the length of this period, which could last months or even years.

The paradox in this phase is that people with thyroid ailments do recognize that unusual things are happening within their bodies and minds, but they are unable to understand them, qualify them, or even describe them accurately. At the same time, their distorted perception of themselves and the world around them causes them to regard their partners' behavior as inappropriate. The thyroid sufferers truly believe that their partners are the ones who have changed and are responsible for their own emotional upheaval. In turn, spouses and other loved ones often react by blaming the patient. Hence, thyroid patients may experience guilt feelings resulting from disagreements that worsen their existing anxiety, stress, anger, and depression.

Distancing is inevitable because the patient becomes unable to deal with the stress of arguing. Although both hypothyroidism and hyperthyroidism can lead to similar behavioral changes, certain changes may be more characteristic of one condition than the other. Let's take a look at some of the changes that can ignite fighting, arguing, and distancing.

Ten Ways That Thyroid Conditions May Change Your Personality and Relationships

Many years of working with and observing people with thyroid conditions have allowed me to identify the following ten types of thyroid-related changes that cause trouble for many couples.

Thyroid patients often become impatient and irritable and may display excessive, unreasonable anger. A thyroid imbalance may make you excessively critical and lead you to pick fights with those around you and snap at them. Often anxiety and worries underlie the criticism and anger that people with thyroid imbalances direct toward others. Ironically, though, people with thyroid conditions do not handle criticism well themselves. Take Janice, for example. She had been happily married for four years when she began experiencing tiredness, anxiety, and weight gain. She then suffered for two years before being diagnosed with hypothyroidism at the age of twenty-seven. Jan-

ice tended to blame her husband's attitudes for their disturbed relationship. She said:

For instance, if I did not want to spend money on a certain thing and he wanted to, I would be unreasonably angry, and I would say things that were inappropriate. I told him he was selfish and that he wasn't working toward a common goal. I perceived any decision he made or anything he said or did as inappropriate. It is a miracle we are still together after what we went through in the past two years.

The situation Janice faced is all too real for people with thyroid ailments. They feel compelled to lash out at the very people to whom they need to turn in times of anxiety. In essence, their behavior is controlled by their affliction.

Another hypothyroid woman told me, "There was a lot of yelling and bickering at home. I was frequently very angry. I was disrespectful to my husband and would snap at him when he asked questions because I was upset about the bills or our financial situation. No matter what he did, I would not have been satisfied." Clearly this report goes to the heart of the matter in depicting the incredible conflict within the patient. For the person experiencing the disease, there is no right answer, and anxiety generates discord.

Similarly, Camille, a thirty-two-year-old housewife who suffered from an overactive thyroid due to Graves' disease, told of a family life filled with constant fighting, screaming, and arguing. She said, "Before I was diagnosed, I wasn't getting along well with my parents, which was annoying to me. I had a short temper with them. At home, I have been very cross and sarcastic with my kids. If one of my children left a shoe lying in the middle of the room, I got really annoyed and picked up the shoe and threw it across the room. I couldn't believe I did that. It was not the way I would normally react." This illustrates patients' common tendency to experience a sense of disbelief regarding their unexplained behavior. They know their behavior deviates from what is "normal" for them, but they have no clue as to why.

Another example reveals the common thread of discord that thyroid patients experience in their relationships. Darlene started noticing symptoms of hyperthyroidism three months after her wedding. She and her husband started fighting over trivial matters and ended up seeking help from a counselor. She confessed:

There are certain things that I should have compromised on. If I had been in a calmer mood, I would have been able to handle that. I did not have patience with my husband. Before the symptoms of hyperthyroidism, I tended to be less emotional. My husband is Jewish, and I'm Catholic. He didn't want to go home

for Christmas. We had a big argument about that. He ended up going home by himself. If I had been more patient, we could have sat down and worked things out.

Darlene worked in a store's customer service department. She experienced the same impatience at work as she had at home and began having problems with her colleagues. She explained the situation like this: "I was lacking patience with the customers all the time. Many times I started crying over trivial matters. I had a big argument with my supervisor. She was irritating me! People say that I would talk really fast. I knew something was wrong, but I had no idea what. I didn't know about hyperthyroidism, where things move quicker."

Darlene's experience is typical of how people with an overactive thyroid are unable to explain their behavioral changes adequately. They feel as if everyone else is to blame, and their behavior is fueled by emotions laced with anger. The fast pace at which hyperthyroid people's brains work may make them regard everybody else as slow and lead them to rationalize the irritability and anger.

People with thyroid conditions may make unrealistic demands of partners, spouses, or family members. They frequently ask others to do things for them, and they also tell others how to do things. A hyperthyroid woman who had serious marital problems as a result of her Graves' disease told me, "I would tell my husband he was never home and that I needed him home. He is a student, and he is not at school full time, and I would get upset because he was not home to help with chores. But in fact, he was doing the best he could, and still I was not satisfied." This example shows how patients are incapable of viewing their relationships rationally. They cannot see situations clearly and may even provoke their partners with their unrealistic expectations.

Thyroid patients, particularly those with hypothyroidism, want peace and quiet. They feel the need to withdraw from activity and noise. They have a low tolerance for sound. In essence, they wish to insulate themselves in a surrealistic world of tranquility. One hypothyroid patient told me, "I would want peace and quiet at home. If I didn't get it, I would start shouting at my children and at my husband. Anything that made a lot of noise or movement irritated me. The TV was a nuisance to me. I couldn't watch it. The children's making a lot of noise was a frustration."

Patients may become withdrawn from friends, and they do not want to talk or go out with people. They may lose all interest in doing things with their partners. A good example is Angel, a twenty-five-year-old woman who was suffering from an underactive thyroid. She said:

All I wanted to do was sleep. I couldn't seem to get enough rest. Nothing made me happy. Ted wanted to take me out to eat, and I didn't want to go. He wanted to go to a movie, and I'd say no. If he rented a movie, I'd just fall asleep. I didn't want to be intimate. I didn't want to cook or clean. Then he would get frustrated, and I'd get really emotional and mad. He didn't understand that I'm more tired than he is.

He would try to talk to me, and it was so hard for me to tell him, "Ted, would you just shut up?" He just wanted to tell me about his day and to hear about my day. Questions, questions, questions, talk, talk, talk—and I was so irritable. At first, I think I wanted him to just shut up, then I didn't really want him to shut up.

I just want to feel better and to have more energy. One year ago, I could not have been happier. I felt good, looked good, and we were going out all the time.

Hypothyroid patients want to be left alone. They just want to sleep and withdraw from those around them. In some cases, they realize the people around them are doing the best they can, but they still want to maintain their isolation.

People with thyroid conditions may require more attention from their partners and often feel that they are not getting enough attention. They feel that whatever a partner might do to comfort them is not enough. Ironically, those with thyroid imbalances have mixed feelings about their loved ones. They want their loved ones to be there for them—but only on their terms. In other words, if loved ones do not follow the "rules" laid out for them by the person with the imbalance, he or she will not hesitate to turn on them. Many thyroid patients told me something like this: "I preferred him just to be there, hold my hand, and listen to me, but not to say anything. When he would say things, it would make me irritable and angry."

Mona, suffering from postpartum hypothyroidism, fought with her husband more than she ever had before. She felt she did not get the attention she needed. "The only thoughts I had during this time were that my husband was not helping me with the things that I needed. I had reached a point where I would have hit him in the face in public. I wanted to feel I was cherished. I was feeling very unattractive, like you do after you have a baby. I was extremely overwhelmed and overtired."

People with thyroid ailments may show a lack of commitment to doing things at home or for the family. They may not want to be asked to do things or may become angry if asked. A common source of disagreement is hypothyroid people's declining interest in doing things around the house. Because they are exhausted, they have difficulty handling even minor chores. Just going to the store can be an insurmountable task.

One patient summed this up as follows:

I felt that as long as he didn't ask anything of me, like cooking dinner when I didn't want to, I was comfortable. I wished he would have understood my emotions and feelings and symptoms, but he didn't at first. He kept pushing me. I guess he thought I was being lazy. I felt something was really wrong. I didn't want him to ask me to get out of bed, but he would. He felt it was all in my mind. He wasn't being empathic or sympathetic, so I would get angry with that.

Thyroid patients may exhibit unexplained hatred toward partners, spouses, relatives, and friends or contradictory, rapidly changing feelings. This problem is aptly demonstrated by the case of Jackie, who developed postpartum hypothyroidism. She described the situation like this:

I had a very good relationship with my parents before. When my baby was two months old, I experienced a lot of irritation and anger toward my mother, who used to be my best friend. My mother became angry that I had become so withdrawn from her and so disrespectful. I was very hurtful to her, but I was sick and couldn't deal with her. I didn't feel connected to her at all. I didn't want her to come to my house. I didn't want her to help me in any way.

Jackie's case is typical in that she realized her relationships had changed, but she felt helpless to do anything about it. She knew things were not the way they used to be, but she was unable to see things in proper perspective. To her, feelings of hatred were unavoidable and unchangeable.

Similarly, Sylvia, who was very much in love with her husband and had had what she called a serene, peaceful relationship with him, told me, "My emotions toward my husband were shifting back and forth. Sometimes I liked to be with him and sometimes not." These shifting feelings are quite common among patients afflicted with thyroid imbalance. When coupled with the types of changes in sexual interest described in Chapter 8, they become a serious source of distancing and conflict.

Thyroid sufferers may become overly anxious about how their emotional changes and health are affecting their ability to do their jobs and earn a living. When work-related anxiety is brought home, it often leads to arguing, angry outbursts, and increased irritability. Poor job performance or even job loss due to hypothyroidism or hyperthyroidism's adverse effects on thinking and reasoning further lowers self-esteem. Issues pertaining to financial security and financial responsibilities often arise, burdening the relationship even further. In other cases, people with a thyroid condition become trapped in their work. Many patients, in trying to hold on to their jobs, devote most of their attention and remaining energy to the effort to maintain their job performance. This tremendous burden on the brain will often be expressed in

outbursts at home as patients' frustrations and inability to fulfill emotional and physical responsibilities in their private lives affect partners or families.

Amanda, a teacher with a hypothyroid condition, described this conflict to me. "I became irritable with students," she said. "I had to exercise a great deal of self-control so that I wouldn't fly off the handle. This would tire me out so much that, when I got home, I was useless to my husband. I felt guilty, like I wasn't really all there to do the things we wanted to do. We would go dancing, and I couldn't remember to move my foot out for each step. It was very noticeable." When patients focus on doing the best they can at work, their home life inevitably suffers, because they have no energy left for family duties and obligations.

In the same fashion, a hyperthyroid person can become obsessed with work, which may alienate his or her partner. This was true for Kenneth, a thirty-two-year-old salesman who took on another part-time job when he hit the manic period of hyperthyroidism. His wife, frustrated by his behavior, said:

For the two years that he was doing the part-time job, we grew apart. He was all work. I couldn't even catch him. Then he slept during the weekend. During that time, he had very little to do with us because he had to work. I felt that it was "Kenneth's life," and then it was me and the kids' life.

People would say, "How do you put up with him?" "He is crazy." "How does he work like that?" "You don't have a life." You start examining your life then and asking yourself what you really have. I felt like he didn't love me or care about me. I saw the same distance between him and the kids and his parents. I kept telling him we were growing apart. I told him, "You're going to wake up one day and we are going to be miles apart." Whatever I told him, it didn't register.

Extreme anger and irritability may lead to violence. Whitney, a thirty-one-year-old woman, was living by herself and had been dating a man for a couple of years when she became hyperthyroid. She used to love this man, and they were making wedding plans when things gradually began to change. In her words:

I had a fairly normal life. As my symptoms progressed, it seemed I was in conflict with everyone. I was disagreeing with everything. People would hurt my feelings easily. The man I was dating at that time refused to understand what I was going through. He was dismissing me and saying it was stress or that I was acting like a baby. He made me feel very small about my problems. He said I was lazy. I was so fatigued from my thyroid condition, but I did not know it. I am not a lazy person!

I remember the intense anger I felt. One day I sat and fantasized about

driving my car through his garage. It seemed like a wonderful thing to do. I didn't act upon that. I wouldn't even think of that today. I became more combative. We had lots of arguments that always ended up with me crying and walking out; my emotions would overtake me.

My emotions caused me to have a continuous internal battle. I had no tolerance or patience. When it is your nature to be generous, giving, kind, tolerant, and basically easygoing, and then you're the complete opposite, it is hard to cope. I became mean and nasty, and I didn't know why I was unhappy. I had tantrums and violent spells. I actually could have killed someone.

Violent actions and thoughts plague many thyroid patients. In this way, the patients may become harmful to themselves and others and could end up facing legal problems as well as the problems associated with the disease itself. The thyroid patient's anger may sometimes be expressed as verbal or even physical violence, as was the case with Ryan, a middle-aged engineer.

Jeannine, Ryan's wife, said, "It was not so easy to talk to him. It was like he was on drugs. He was verbally abusive all the time. He was like a volcano: any little thing causes it to erupt."

Ryan related an episode that illustrates how trivial, unimportant matters can trigger bouts of anger and violence:

One day, Jeannine's sister stayed with us. She didn't like me, and she irritated me quite a bit. I sat down and listened to what my wife had to say, and then when I decided to say something, her sister locked herself in the bathroom because she didn't want to hear what I had to say. It totally infuriated me. I went to the bathroom door and started to knock on it. I told her to let me in the door. When she said no, I said, "Let me in the damn door!" When she said no again, the next thing I knew, my arm had just gone through the door. I don't even remember hitting the door, but my arm was through the door, and she was standing up in the shower screaming. I didn't hit her, but I felt like hitting her. She came back in the den, and I told her what I had to say, and I said, "Now if you want to go in the bathroom, you can."

Jeannine was a passive and submissive person. She remained in the marriage despite the lack of communication, anger, and distance between her and Ryan.

Hyperthyroidism may make someone act in ways that others may perceive as inconsistent and irrational. Paul and his father were partners in running a gas station. When Paul became hyperthyroid, the business began to do poorly because of his irrational behavior and aggressiveness with customers. As a result, Paul and his father eventually stopped talking to each other.

Friends would ask Paul's wife, "Why is he acting so nervous, and why does he have to speed to go somewhere when he is not in a hurry?" She said,

"We would fly out of the driveway like it was an emergency. He acts as if he is crazy. Everything has to be fast."

According to Paul, "My personality really changed drastically. I got to where I really couldn't relax at all, and even at home, I couldn't stand to sit on the couch. I had to be doing something, or I would go into a mood swing where I would get agitated with any little thing." Paul's case is typical with regard to alienation and extreme personality change.

The Partner's Four Most Common Reactions

Not knowing that there is a physical or chemical reason for the personality change, the partner of the person with a thyroid imbalance often becomes confused. The reactions to this new situation vary from person to person. The spouse has been used to living with one person and now must live with a new person who has different perceptions, feelings, and emotions. The differences in perception and language between men and women become a real issue for most spouses because, for some time, they have coped with and adjusted to certain differences—and now those differences have changed. Lack of understanding can generate inappropriate reactions that may contribute to more arguing.

Here are some common reactions of partners:

Partners may pull away from the person with the thyroid imbalance. The distancing, which is the spouse's typical response, initially reflects avoidance of problems. The patient perceives this pulling away as a lack of caring, understanding, and empathy—as a statement that the partner is indifferent. Because of the lower self-esteem generated by thyroid imbalance, the patient tends to feel more anger and may attribute some of his or her problems to the distancing behavior.

This can be seen in the case of Sondra, who was suffering from hypothyroidism and was as confused as her husband about what had happened to their relationship. "We used to get along so well," she said. "I became irritable. I felt he was not really empathic with me for some reason. He does not talk to me very much anymore." Sondra focuses on the distance as a cause more than an effect of her behavior. The lines become blurred for patients when they try to fathom exactly what caused the relationship changes.

Partners may refuse to accept the personality changes associated with thyroid conditions and react with anger and criticism. This typically causes the fighting to escalate. The spouse may go overboard with criticism, which exacerbates the patient's feelings of low self-esteem. The patient may be blamed for deliberately creating arguments. "He took away my motivation and my self-esteem," one hyperthyroid woman said. "He makes me feel awkward about being sick. He asked me if I was doing it for attention. He doesn't

have a clue that it is embarrassing. I never felt like he understood what I was going through. We would fight over stupid stuff, like what kind of shampoo to buy." After this couple had seen a counselor for several months with no improvement in their relationship, her overactive thyroid was diagnosed. When the husband learned that his wife's changing emotions were due to her thyroid condition, they stopped going to the psychologist, and he became understanding, flexible, and compassionate.

Partners may be unable to cope and become depressed and anxious themselves. When the wife has a thyroid condition, the husband may become anxious, realize the severity of their problems, and make an effort to understand or talk things over. He may even suggest counseling. During her hyperthyroidism, Ashley experienced a lot of anxiety and mood swings. Her husband, who is somewhat dependent, became anxious, which generated depression. Ashley said, "Initially, I was the one who had a lot of anxiety and anger, but quickly he also became nervous, had bouts of anger, and became depressed."

A few partners may recognize that their loved one has definitely changed and will make an effort to find a medical reason for the changes. Lynette, who had been married for fifteen years, had been very close to her husband since they were children and was supportive of him when he was in law school. They had learned to live with each other and were very close. Initially, when Lynette started having symptoms of hypothyroidism—such as outbursts of anger, irritability, and weight gain—he was quite supportive. He did not know that the problem was physical, however. Although Lynette became angrier and more irritable, they were so close that her husband quickly learned to adapt to the situation, and he concluded that Lynette's behavior stemmed from her weight problem. In a reassuring tone, he repeatedly told her that what was bothering her the most was really the weight. "You have to exercise and try to stay on a diet," he kept telling her. She followed his advice and worked out at the gym, but her condition remained unchanged. After her physicians dismissed Lynette as not having a medical problem, her husband continued to be supportive and started searching self-help books, which led him to suspect that she had a thyroid condition.

A thyroid patient experiencing a change in personality may not necessarily recognize that he or she is the source of the problem, although the person usually does recognize that problems exist. At this stage, however, most people who are close to someone with a thyroid imbalance do not make an effort to understand. Other partners, seeing that the relationship is deteriorating rapidly, often suggest that the couple see a psychologist. Under these circumstances, counseling may or may not be helpful because the source of the problem—the thyroid condition—is not recognized, and the irrational behavior, uncontrollable anger, and irritability continue, which perpetuate the

arguing. Often, despite counseling, the couple grows further apart, and this may lead to a divorce, particularly if the thyroid condition has not been diagnosed and its role in the couple's problems recognized early enough.

At times, even basic communication may become a problem. Gene, the husband of a hyperthyroid woman, said, "What she is thinking comes out of her mouth several times. Either she might tell me something three times before I get angry, or she may think she told me something and she never uttered the words, and then she becomes infuriated."

When couples have preexisting problems, those problems may be exacerbated by the intrusion of the thyroid imbalance, and arguing can mount to unbelievable levels. Without counseling, the relationship will inevitably founder.

Relationships After Diagnosis

Once the condition has been diagnosed, the couple is frequently relieved because they have found an explanation for their problems. The treatment of the thyroid imbalance generally leads to a gradual resolution of the emotional stress, guilt feelings, and mental effects. Still, this often means that these factors may linger for several months or even years, depending on the complexity of the thyroid condition and its treatment.

After being diagnosed with hypothyroidism, Jamie was started on thyroid hormone treatment. She has not fully recovered and feels quite guilty about not being able to keep up with her husband or provide him with the attention he needs. She said:

I am depressed because I feel like I can't give my husband what I want to give him. I still am not able to be there for him and to do things with him. I want to be intimate like I felt in our first year of marriage. I enjoyed having sex with him, going out, and doing things with friends. Then, after I changed, I didn't want to be intimate with him. That same touch would make me bristle. It was like I had an aversion to him. I felt like telling him, "Just leave me alone." Then I started feeling guilty.

After a few months, though, Jamie's personality returned to normal. Her husband, Andy, knew she had a thyroid imbalance, and Jamie's doctor had explained that it would take a few weeks until the thyroid was regulated. Andy said, "I became used to the change from her being happy to being a person who would snap. She never hollered at me, but she came back quickly with 'Leave me alone!' I knew this was not her." In this type of situation, both partners feel guilty, but the patient experiences the greater guilt because he or she feels responsible for having brought the disease into the relationship.

Monica, a thirty-three-year-old accountant, experienced a similar situation. She had suffered from Graves' disease for more than a year. The intrusion of the thyroid condition into her relationship with her partner, Jack, led to arguing, fighting, and distancing. Monica recognized that her behavior was the cause of some of the problems and felt guilty because she realized that she was not easy to live with.

"I have to say I'm probably hot-blooded also," she said. "I am this way about everything—kids, money, work. I'm sure it is hard for Jack. I can imagine that he had a hard time trying to decide what I was going to feel like today or maybe what I would feel like in thirty minutes. I probably was very hard to please."

To cite another example, one day a patient who had been suffering from Graves' disease for three years walked into my office. For the first time, her thyroid seemed to be well regulated, so I was surprised when she told me that she was getting a divorce. She said she had not felt this good for such a long time. Her mood swings, irritability, and anxiety had resolved. She had started working out and had been feeling good about herself. I told her that usually people get divorced before diagnosis, when their thyroid condition is affecting them the most. She said:

I had been having marital problems for so long! It was an unhealthy relationship for a long time, and in fact, I feel that the stress of the marriage could have caused my Graves' disease. I felt like I had lost so much. I didn't have a job, money, or any control over my life or my health. Even though he was bad for me, I didn't have the courage or the strength to divorce him when I was ill. But now I have regained my self-esteem, and I see more clearly. I am more self-confident. I had to wait to feel this way to have the courage to divorce him.

What Partners Need to Know

Many people with thyroid disease have indicated the importance of receiving support and understanding from their partner or spouse after they are diagnosed and started on treatment. One hypothyroid woman said, "When I did see the doctor and was diagnosed, then my husband started being sympathetic and supportive. He let me sleep, and he would keep my son away from me, but it wasn't until after I was diagnosed. This was so helpful. That helped me recover quicker. Our arguing just stopped."

The partner's support and understanding are crucial for recovery because patients are still not the same as they used to be. They are still unable to control the anxiety, mood swings, anger, and irritability adequately.

Spouses of thyroid patients should also be involved in the management of the thyroid condition. A well-informed spouse will have a significant bene-

ficial impact on the patient's recovery from the emotional effects and suffering due to the thyroid condition. Sometimes the spouse's support may even be as instrumental as the treatment provided by the physician.

Peter, a supportive husband, told me about his wife, who was still being treated for her thyroid condition. "When I see her slipping away," he said, "I know now what that is about, and it is not because she needs another pill. The process of recovery is slow and gradual. I think that thyroid patients need a lot of rest, and I encourage her to get it. Now I don't get upset when all she wants to do is sleep."

Many husbands, not understanding the impact of a thyroid imbalance, may refuse to put up with their spouses. Some may blame women for using hormones as an excuse for bad behavior. It is just as important for male partners to learn how hormones affect mood as it is for women with thyroid imbalances to become informed about their own condition. The imbalance in the brain takes time to normalize. Partners, unaware of these effects, quite often believe that the thyroid sufferer's reactions are psychological.

Some men embrace this challenge. When Loretta got remarried, her husband knew about her thyroid condition. He was an intelligent man and began to educate himself by reading about thyroid disease and its effects. He very quickly realized that he needed to be one of the primary supports for Loretta's recovery and to help her with her suffering. He was very much in love with her and became interested in her condition to the point that he knew perhaps even more about thyroid disease than Loretta did. He came to every office visit and was the one asking questions about therapy, testing, and the effects of thyroid imbalance on the body.

Other spouses, though, prefer to remain ignorant about the disease and its symptoms. When a partner chooses this method of coping with the situation, the patient is left feeling ignored and even guiltier. This will only exacerbate the situation and make the patient's suffering linger indefinitely.

The examples provided in this chapter illustrate how the intrusion of a thyroid condition can easily disturb the harmony of family life. Understanding the emotional aspects of a thyroid imbalance will not only help both patients and family members maintain their relationships; it will also help reduce the stress that can affect the course of the thyroid condition.

OVERLAPPING SYMPTOMS

Fatigue, Chronic Fatigue, Hypoglycemia, and Fibromyalgia

"I am tired. I am exhausted. I cannot function the way I used to!" I hear these complaints from patients all the time. Many of them come to me because for some time they have been unable to function as before. The tiredness and feeling of exhaustion have robbed them of any sense of joy in everyday life and have interfered with their lives at all levels. Obviously when someone suffering from fatigue sees a specialist in thyroid disease, the tired person often has a notion that a thyroid imbalance may be a contributing factor. Frequently I see in the patient's expression that I am his or her last hope.

Typically, these patients have already seen quite a few doctors for the same complaint and often bring with them copies of records and tests that had been requested by other physicians. The tests and the causes considered inevitably vary from physician to physician. The interpretation of fatigue tends to differ depending on the training, experience, and interest that a physician may have in a particular field of medicine. Most physicians, when faced with the symptom of severe fatigue, are primarily concerned with identifying a major physical condition causing the fatigue. The most common diseases that cross physicians' minds are hepatitis (either alcoholic or viral), an acute or chronic infection such as tuberculosis or HIV, Lyme disease, diabetes or kidney problems, anemia, cancer, multiple sclerosis, or a cardiac condition. In the most general sense, the list of potential causes of fatigue is almost endless.

But when it comes right down to it, major medical conditions are found in only a small percentage of people struggling with fatigue. Each year, doctors record nearly 500 million patient visits to their offices for fatigue.

People say that they're tired so often that it is frequently ignored: feeling

tired has become part of the normal way of living. If a person is suffering from several other symptoms, he or she might initially mention only the tiredness and exhaustion because of a perception that all the other symptoms are either part of the tiredness or caused by it. Many people figure, "This is stress. Everything will be fine." Many doctors, too, will often dismiss complaints of tiredness with the recommendation that the patient get more exercise, eat a better diet, or lose weight. Frequently this allows the symptoms of significant unexplained suffering to continue.

Being tired is indeed a common complaint, and only if you insist that you are more than just fatigued are your symptoms likely to be taken seriously by friends, relatives, or physicians. Studies of fatigue have suggested that there is a continuum ranging from "healthy normal" fatigue to severe and debilitating fatigue. Surveys of European and American communities have shown that fatigue is a common symptom and occurs in 6.9 to 33 percent of men and 10.9 to 42 percent of women.¹ One study conducted in a primary care setting showed that fatigue of a month's duration or more was reported as a major problem among 19 percent of men and 28 percent of women.²

In most people, however, fatigue is the result of more than one factor. In order to narrow down the potential causes of fatigue, one has to go through a checklist of symptoms. At times, the process seems to involve detective work (see the list "Potential Causes of Fatigue" at the end of the chapter).

Doctors consider fatigue to be one of the prime hallmarks of depression. If your endocrine system is working well, expressing the symptom of fatigue often leads to a search for hidden depression. If a physician uses the conventional medical criteria, he or she may ultimately come up with a diagnosis of depression. Quite often when sleep disturbances, decreased interest in pleasure, and appetite changes occur, physicians may think that the full criteria for depression are met. But regardless of whether the tiredness is generated by an infection, a physical condition, poor nutrition, or toxins, it will often lead to frustration and guilty feelings about not being able to accomplish what we need to accomplish. Tiredness causes increased sleep problems; sleep is interrupted by worries and waves of anxiety; when you feel drained, you tend to eat more to boost your energy. The effects of tiredness on sleep, self-esteem, and weight will inevitably induce confusion about what you may be suffering from.

The same level of confusion may exist if the main reason for your fatigue is depression or an anxiety disorder. These disorders can cause physical symptoms such as pain and gastrointestinal symptoms. The occurrence of these physical symptoms may cause your doctor to search for a physical disorder.

The Tripod of Wellness

Our well-being is under the scrutiny of three major systems: the brain, the endocrine system, and the immune system. I call this the tripod of wellness. These three systems, constantly interacting, allow us to appropriately react to and fight anything in the environment that threatens and interferes with our mental and physical health. The interactions among these three systems are so tight that in some cases a disturbance of one system ultimately will alter the functioning of the other two.

Once a dysfunction of the endocrine system such as a thyroid imbalance occurs, the other two components of the tripod of wellness (the brain and the immune system) are almost inevitably affected. A person with a thyroid imbalance may become depressed and overwhelmed with stress. The depression causes the immune system to weaken, resulting in infection and more fatigue.

A disturbed immune system causing an autoimmune attack can by itself promote depression. During the autoimmune process, the immune system produces chemicals such as cytokines, which in turn can affect brain neurotransmitters that regulate mood and behavior. Celiac disease is an example of an autoimmune disorder in which the immune system affects mood. Patients suffering from celiac disease have a much higher incidence of depression and panic attack, due primarily to the effects of the immune system on brain chemicals involved in mood and emotions.³

Quite rarely, the immune effects on the brain are so severe that a patient may end up suffering from a neurological condition called Hashimoto's encephalopathy.⁴ Patients with Hashimoto's encephalopathy suffer from lethargy, involuntary muscle movements, muscle weakness, seizures, impaired cognition, abnormal behavior, and depression. This condition is treated with high doses of glucocorticoids to slow down the effects of the immune system. The treatment often results in a dramatic improvement of the symptoms within a few weeks.

This cascade of one system affecting another and thereby worsening the fatigue has a wide range of implications. The first is that it reduces the likelihood that a doctor will consider an endocrine problem as the source of the suffering, because now other systems of the body are involved as well. The second implication is that if a person has more than one condition causing fatigue, symptoms of both conditions may escalate, making it highly likely that one of the conditions will be overlooked. Finally, the escalation of symptoms can become extreme in some patients, who may end up suffering from chronic depression, fibromyalgia, and chronic fatigue syndrome.

Many patients who were diagnosed with fibromyalgia or chronic fatigue syndrome (CFS) and later found to be hypothyroid ask me whether having the

two conditions was just a coincidence or whether the thyroid disorder triggered their fibromyalgia or chronic fatigue syndrome. The answer is not always straightforward. Did the stress or depression generated by a thyroid imbalance weaken the immune system, making the patient vulnerable to fibromyalgia or chronic fatigue syndrome? Or did the overwhelming stress and depression caused by the fatigue and the physical symptoms of fibromyalgia or chronic fatigue syndrome affect the immune system, resulting in a thyroid imbalance? Or did the immune system affect brain transmitters and promote fatigue and depression? The relationship among stress, depression, and disorders such as fibromyalgia and chronic fatigue syndrome is complex but reflects interactions among the brain, endocrine system, and immune system.

An infection with a virus such as a retrovirus seems to play a major role in the occurrence of CFS. People exposed to high levels of stress may not recover from a viral illness as swiftly as people with lower stress levels (or better mechanisms for coping with stress). Now we understand that it is the psychological vulnerability of some people that makes their immune system weaker, and this causes the viral infection to linger for a long time.⁵ For most people suffering from chronic fatigue syndrome, it is virtually impossible to determine which problem initiated the cascade of events—stress, depression, viral infection, disturbance of the immune system, or disturbance of the endocrine system.⁶

A series of studies has also established that the endocrine system is often disturbed in patients suffering from CFS. Many, for instance, are found to have low cortisol levels, an indication of slowing of the adrenal glands. But again, it is not clear whether such disturbances are the cause of the disorder or are the consequence of the depression and the stress associated with the disorder.

Endocrine Fatigue

As an endocrinologist, I feel privileged to specialize in a major system of the body that regulates the largest and most significant components of human physiology. The endocrine system affects most facets of our well-being from minute to minute.

Although thyroid hormone imbalance is undoubtedly the leading cause of fatigue related to endocrine gland problems, deficiencies of the pituitary gland and the adrenals could be hidden causes of fatigue. Countless patients who have suffered fatigue as the result of a dysfunction of the endocrine system have wandered from physician to physician searching for help, when all it would have taken to uncover the source of their suffering was a blood test. In one way or another, most hormones regulate bodily energy levels. Literally, any deficiency of a hormone produced by the endocrine system can promote

fatigue. Hormones are the chemicals that are dispersed to your organs and oversee the basic functions of the cells in your body. A typical example of a malfunctioning endocrine gland that results in extreme tiredness and exhaustion is adrenal insufficiency, or Addison's disease. In adrenal insufficiency, low cortisol promotes the fatigue. In nearly 70 percent of cases, this condition is due to an autoimmune attack on the adrenal glands. The attack and the destructive process that takes place in the adrenal glands are reminiscent of Hashimoto's thyroiditis. In fact, patients suffering from autoimmune disorders, including Hashimoto's thyroiditis or Graves' disease, are more prone to becoming afflicted by Addison's disease and vice versa.

Physicians often diagnose Addison's disease only when the disease and the cortisol deficiency have progressed to critical levels. Frequently patients suffer from fatigue for a long period of time before the diagnosis is made. An example of this is Betty, a forty-two-year-old woman who had lost nearly twenty pounds over two years. Her fatigue and exhaustion became debilitating. Her muscle weakness and loss of appetite were so severe that she had seen ten physicians. Some diagnosed her with depression, others with chronic fatigue syndrome or food allergies. Her misery turned out to be due to a deficiency of the adrenal glands, which also made her depressed. I gave her hydrocortisone treatment, and her fatigue and other symptoms resolved over the next month.

Another often overlooked cause of persistent fatigue is pituitary fatigue. A study published by Australian researchers showed that growth hormone deficiency and cortisol deficiency due to pituitary dysfunction are quite common among patients suffering from fatigue.⁷

The pituitary gland, the master gland that controls most endocrine glands—including the thyroid, the adrenal glands, and the sexual glands—receives messages from both the brain and the glands that it regulates. The pituitary gland, although tiny and hidden in a small socket of the bone at the base of the skull (called the sella turcica), has tremendous effects on various aspects of bodily functioning. People in whom this gland is destroyed—by a tumor, for instance, or by an abrupt reduction in blood supply (as might occur during severe hemorrhage)—begin to suffer from hypopituitarism, a deficiency in the hormones produced by the pituitary gland. Among the wide array of effects that may result from hypopituitarism are an underactive thyroid, an underactive adrenal gland, a deficiency in sex hormones, and a deficiency in growth hormone. The end result is the occurrence of a wide range of symptoms including fatigue, depression, and low blood pressure. Among other effects, hypopituitarism can make you prone to have cardiovascular disease, and this has to do with low growth hormone and inadequate levels of other hormones.⁸ Patients with hypopituitarism may also experi-

ence symptoms of hypoglycemia, joint pains and aches, muscle aches, and dizziness.

If you have an autoimmune thyroid disease or another autoimmune condition, you become vulnerable to an autoimmune attack on your pituitary gland, which in turn can cause pituitary dysfunction. When this happens, your immune system produces high levels of pituitary-attacking antibodies. These antibodies are directed at the prolactin-secreting cells or other cells, including those that produce growth hormone. In one study, antipituitary antibodies were found in 22.2 percent of patients with various autoimmune conditions.⁹

Another research study has shown that approximately one of five patients with Graves' disease or Hashimoto's thyroiditis has pituitary-attacking antibodies.¹⁰ Having pituitary antibodies in your system can make you suffer from severe growth hormone deficiency and even cortisol deficiency,¹¹ both important causes of fatigue and physical and mental exhaustion. If you have ongoing fatigue, you need to have your pituitary tested, particularly if you also have an autoimmune disorder. Also, if your thyroid imbalance has been corrected with treatment and you continue to suffer from lingering fatigue and depression, your residual symptoms could be due to an autoimmune attack on your pituitary.

In recent years, extensive research has shown that head trauma can cause some damage to the pituitary gland and cause deficiency in growth hormone, thyroid hormone, and even sex hormones.¹² Hypopituitarism can occur even decades after head trauma, often related to road accidents.¹³ Patients with head trauma (traumatic brain injury) become very fatigued and have a significant deterioration in attention, concentration, learning abilities, memory, problem solving, and even language. Many of these symptoms are related to growth hormone deficiency, which is the most common pituitary abnormality among people with traumatic brain injury.¹⁴

Pituitary hormone deficiencies can also occur as a result of an "empty sella," a herniation of the subarachnoid space within the sella turcica.¹⁵ It can be caused by excess pressure in the brain or by a pituitary tumor. Head trauma, radiation, and surgery can also produce an empty sella. Nearly one of five patients with empty sella suffer one or more pituitary hormone deficiencies.

Although growth hormone promotes growth in children (a deficiency in infancy or childhood will result in dwarfism), growth hormone deficiency in adults was, until recently, thought not to affect health. However, expanding research has shown that a deficiency in growth hormone in adults often results in fatigue, reduced capacity for exercise, muscle weakness, impaired cognition, and decreased muscle mass.¹⁶ One study showed that 61 percent of patients with adult-onset growth hormone deficiency suffer from atypical

depression.¹⁷ This is simply because growth hormone, like thyroid hormone, regulates chemical transmitters in the brain. Growth hormone deficiency can promote significant mental distress, lead to social isolation and anxiety, and cause fibromyalgia.¹⁸ Growth hormone deficiency could account for as many as one-third of all cases of fibromyalgia. Growth hormone deficiency can make you gain weight and have an abnormal body composition. In addition to losing muscle, you will gain fat around the abdomen. This in turn promotes inefficiency of insulin and high levels of inflammation in your fat tissue. Growth hormone deficiency increases your risk of cardiovascular disease and lowers cardiac performance.

Treatment with daily injections of growth hormone will improve your energy, sleep, emotions, and cognition. It will make your muscles stronger, will make you lose fat, and will improve levels of cholesterol and triglycerides. It will also improve your bone density. After two months of treatment, your depression will lift. Growth hormone treatment helps thyroid hormone to work efficiently and promotes good skin health. However, it can cause carpal tunnel syndrome, peripheral swelling, joint pains and swelling, gynecomastia, and high blood sugar. If you are receiving growth hormone treatment, avoid taking oral estrogens. Oral estrogens may lessen the body composition benefits of the treatment.

Three months of low-dose growth hormone therapy is generally enough to predict if you will benefit from the treatment. If you do, you may need to continue the treatment for a long time. According to research, growth hormone treatment over a ten-year period seems to be safe.

Thyroid Imbalance and Fibromyalgia

For years, the lack of an identifiable basis for fibromyalgia led many physicians to deny that the condition even existed. In 1990 the American College of Rheumatology issued criteria for the classification and diagnosis of fibromyalgia.¹⁹ These criteria include a history of musculoskeletal pain in several areas of the body for at least three months and pain and tenderness in at least eleven of the eighteen trigger point sites by finger examination. The pains and aches often wax and wane, and you become sensitive to pressure applied to painful spots or even from clothing. You may also suffer from headaches and morning stiffness. The fatigue in fibromyalgia often improves through the day but recurs in the late afternoon and evening. Fibromyalgia will typically make you experience light, restless, nonrefreshing sleep. A minimal physical effort makes you more tired, and this affects your life at work and at home. You may experience other symptoms, such as irritable bowel syndrome, urinary frequency due to cystitis (an inflammation of the bladder), emotional distress, anxiety, and irritability. You also may become easily dis-

tressed by daily hassles. You may see yourself becoming disabled and sick. You become frustrated because people surrounding you, including your relatives, see you as healthy, but you do not feel healthy.

Fibromyalgia affects 5 percent of the population. More than 80 percent of those who suffer from fibromyalgia are women, and the onset of the condition is usually between the ages of twenty and fifty. We don't know exactly what causes fibromyalgia, but research has suggested that free radicals and nitric oxide in muscles play an important role in the condition.²⁰ For this reason fibromyalgia patients need to take antioxidants, omega-3 and omega-6 fatty acids, and vitamins.²¹ Vitamin D deficiency and low iron stores are also thought to play a role in inducing symptoms of fibromyalgia. While a precise mechanism that can explain all cases of fibromyalgia has not been identified so far, the thyroid system clearly plays a major role in promoting its occurrence.

In fibromyalgia there is a constant low-level activation of the coagulation system.²² The coagulation abnormality does not produce a blood clot, but generates a soluble fibrin monomer (SFM), which coats the inside of small blood vessels and thereby limits oxygen and nutrient flows into the cells. The decreased oxygen supply to the cells leads to fatigue, muscle pain, brain fog, and sleep disturbances. Your genes could make you produce too much SFM. Environmental factors, including trauma, exposure to heavy metals, and toxins coming from viruses, yeast, and bacteria, can also promote excessive production of SFM. The SFM coating of the small vessels favors the growth of yeast, bacteria, and mycoplasmas, which can hide in the coating and escape destruction by the immune system. The clotting abnormality and the hidden infection make thyroid hormone work less efficiently.²³ For this reason, some doctors advocate treatment with the active form of thyroid hormone, T3, to overcome this resistance and to treat the symptoms of fibromyalgia. People suffering from fibromyalgia can improve or even be cured when they are treated with high amounts of T3 in conjunction with taking nutritional supplements, eating a wholesome diet, and exercising.²⁴ In one report, 75 percent of patients improved when they followed this treatment program, and nearly 40 percent were cured.²⁵ The doses used, however, almost inevitably make the patients hyperthyroid. In my opinion, you may get similar benefits if you take lower doses of T3.

Immune attack on the thyroid is common in patients with fibromyalgia. One of three patients with fibromyalgia has an autoimmune thyroid disease.²⁶ Patients suffering from fibromyalgia are four times more likely to have an autoimmune thyroid disease than people without fibromyalgia.²⁷ Patients with fibromyalgia in conjunction with an autoimmune thyroid disease often have had depression or another mental ailment.

Doctors refer to fibromyalgia caused by hypothyroidism as "hypothyroid

fibromyalgia,” as opposed to “euthyroid fibromyalgia” (meaning fibromyalgia not caused by a dysfunctional gland). Nearly 12 percent of all cases of fibromyalgia are caused by an underactive thyroid.²⁸ If you have been diagnosed with fibromyalgia, you need to be tested for underactive thyroid. Doctors typically diagnose fibromyalgia months or even years after a person has been diagnosed with hypothyroidism. Often the patient has complained of fatigue, aches, and pains before therapy, but these symptoms were initially attributed to hypothyroidism. After the thyroid has been adequately regulated, however, the patient continues to complain of these and a few other symptoms that, taken together, are consistent with fibromyalgia.

Melinda, age forty-two, was suffering from numerous symptoms quite typical of fibromyalgia with a significant component of depression. When she was diagnosed with hypothyroidism after three years of going from doctor to doctor seeking an answer, she was happy and relieved, thinking that all of her problems were due to her thyroid. Although correction of her thyroid imbalance did result in some improvement, it did not completely resolve her suffering.

During Melinda’s first visit to me, before she was started on thyroid medication, her husband said:

Every 60 or 120 days, she will sit down and write a list of how she’s feeling in anticipation of seeing a new doctor. These symptoms range from being dizzy to one cheek going numb, to an uncontrolled spasm in the muscle, weak knees, depression, dry eyes, pains and aches in her joints, stiffness, sleep problems, aches in muscles, and legs and toes tingling. It is rare that these lists get to the doctor’s hands because it’s easy to type the list, but there is a fear in handing it to the doctor. He or she looks at this long list of symptoms that Melinda says she is experiencing all the time and concludes, “This is one physically and mentally sick puppy and it’s beyond me,” or “This can’t be happening.”

My findings indicated that Melinda was suffering from two separate conditions, fibromyalgia and hypothyroidism. The underactive thyroid might have promoted the fibromyalgia and was exacerbating its symptoms. As noted earlier, after treatment of her thyroid imbalance, many of Melinda’s symptoms improved, but many related to the fibromyalgia persisted.

Doctors’ frequent dismissal of patients like Melinda and their lack of support, education, and recognition of the syndrome often lead patients to consult physician after physician, and sometimes to opt out of the medical establishment altogether. They may seek help from unreliable healers, subjecting themselves to quackery, and even accept dangerous treatments that have not been proven effective.

Fibromyalgia can also be triggered following treatment of an overactive

thyroid. Poor correction of an overactive thyroid or repeated rapid swings of thyroid levels during treatment (causing abrupt shifts from hyperthyroidism to severe hypothyroidism) can provoke onset of fibromyalgia (see Chapter 16).

Fibromyalgia may begin following an emotional stress, such as an automobile accident or a work-related accident. Some patients are emotionally disturbed or have suffered from depression in the past. Stress could conceivably trigger fibromyalgia by making the pituitary gland slow down the manufacture of growth hormone.

Activation of the adrenal system, excess cortisol, and excessive production of substance P and release of inflammatory chemicals may be at the root of the problem in some patients with fibromyalgia. Many people suffering with fibromyalgia can be helped with the serotonin-3 receptor antagonist troisetron. In addition, the flavonoid quercetin, which slows down inflammation and lowers the activation of mast cells, helps with the symptoms.²⁹ Melatonin, 3 milligrams at bedtime, can improve your sleep and the pain and aches. Sleep disturbances can also be reduced by taking a growth hormone secretagogue (GHS).³⁰ If you are premenopausal, your symptoms tend to worsen during menstrual periods. Women tend to have more severe pain after menopause. Twenty-five percent of postmenopausal women with fibromyalgia indicate that their symptoms started at the time of menopause.³¹

Before accepting the diagnosis of fibromyalgia, discuss other disorders with your doctor. Some of the symptoms of fibromyalgia are also symptoms of connective tissue disorders, such as rheumatoid arthritis, Sjögren's syndrome, polymyalgia rheumatica, polymyositis, and lupus. These conditions can cause generalized pain syndrome, as can parathyroid disease and osteoarthritis. Also, many patients with fibromyalgia suffer simultaneously from a connective tissue disorder such as Raynaud's phenomenon or Sjögren's syndrome.

Fibromyalgia, whether caused by or co-occurring with an underactive thyroid, is not necessarily a crippling disease. There are ways to control the symptoms. Strength training significantly improves muscle strength and joint function in women with fibromyalgia.

Small doses of tricyclic antidepressants such as amitriptyline improve sleep and pain from fibromyalgia, but these do not work in everyone. Newer agents such as the dual serotonin-norepinephrine reuptake inhibitor duloxetine and the new antiseizure drug pregabalin are quite effective and often work better than the tricyclic antidepressants.³² Research has shown that pregabalin at a dose of 450 milligrams per day improves symptoms of fibromyalgia, including sleep and fatigue.³³ It is a well-tolerated treatment and improves the quality of life. Deep water running seems to be a safe exercise that has a positive impact on the pain. In addition, it helps tremendously with the emotional aspects of the condition.

A muscle relaxant taken in the evening may be helpful in reducing aches and pains and sleep problems in fibromyalgia patients. Achieving aerobic fitness and avoiding a sedentary lifestyle will gradually improve the symptoms. Excessive exercise, on the other hand, can exacerbate the symptoms. Massage has helped many patients. Antioxidant supplementation helps with pain and aches. I have found that avoiding caffeine in the afternoon and evening improves the quality of sleep. Also, patients should avoid too much noise at night. A low-salt vegan diet rich in lactobacteria and emphasizing uncooked foods has been shown to improve the symptoms of fibromyalgia.³⁴

Hypnotherapy seems to be more effective than physical therapy in persistent fibromyalgia. Counseling and biofeedback have helped many patients as well. Cognitive behavioral therapy and spiritual healing techniques such as prayer can also be of tremendous benefit.

Research has also shown that tai chi, which combines physical exercise and mind-body therapy, improves the symptoms of fibromyalgia.³⁵ Meditation therapy and living mindfully also help. Meditation will improve anxiety, pain, and depression, enhance mood and self-esteem, and reduce the perception of stress.³⁶

Acupuncture treatment seems to be quite effective in patients with fibromyalgia. A study published by researchers at the Southern California University of Health Sciences showed that acupuncture is effective in improving pain and depression in patients with fibromyalgia.³⁷

One trial demonstrated that the subcutaneous administration of growth hormone daily was found to be effective in improving the symptoms of fibromyalgia, particularly the aches and pains, fatigue, and reduced capacity for exercise in patients with low IGF1 levels.³⁸ Another treatment modality for fibromyalgia is hyperbaric oxygen therapy. This treatment greatly helps the symptoms of fibromyalgia patients.

Thyroid Imbalance and Chronic Fatigue Syndrome

The Centers for Disease Control define chronic fatigue syndrome as a new onset of persistent or relapsing debilitating fatigue or easy fatigability that does not resolve with bed rest and is made worse by exercise. In general, the diagnosis is considered if the fatigue has lasted at least six months.³⁹ Other symptoms that may occur in chronic fatigue syndrome are chills, sore throat, painful regions, generalized muscle weakness, muscle pain, prolonged fatigue after exercise, headaches, joint pains, neuropsychological symptoms, and sleep disturbances.

Epidemiologic studies conducted in several countries have shown that the frequency of chronic fatigue syndrome in the general population is 0.3 to 1 percent.⁴⁰ The neuropsychological symptoms of both depression and

chronic fatigue syndrome are quite similar. However certain physical effects (low-grade fever, night sweats, swollen lymph nodes, and pharyngitis) will point to CFS rather than depression. The psychological impairment can lead to social pressure and isolation. Patients may be described as “crazy” or “lazy.”

Patients with chronic fatigue syndrome view themselves negatively, and the way they perceive and describe their illness may perpetuate their symptoms. For this reason, social support is of tremendous importance. Research has shown that lack of social support perpetuates the fatigue and the functional impairment.

Involvement of the central nervous system and deficiency of the hypothalamic-pituitary-adrenal system contribute to the disorder. Low DHEA-sulfate and inflammation may be contributing to the disrupted functioning of the immune system. Inflammation and high levels of oxidative stress, and perhaps lack of antioxidant defense, account for the occurrence of chronic fatigue syndrome. Supplementing with lactic acid bacteria, which are strong antioxidants, improves the functioning of the immune system and reduces the symptoms of chronic fatigue syndrome.⁴¹

Recent research has shown that zinc levels are quite low in patients with CFS, and the lower the zinc levels, the more severe the symptoms. Low zinc promotes more inflammation and more disturbances in the T lymphocytes.⁴² Taking zinc supplements should be part of the treatment program. Deficiencies in other vitamins and micronutrients, including deficiency in B vitamins, vitamin C, magnesium, sodium, L-tryptophan, L-carnitine, coenzyme Q₁₀, and essential fatty acids, are also blamed for the occurrence of CFS.⁴³ For this reason patients with chronic fatigue syndrome are often prescribed a high-potency vitamin and mineral supplement.

Some studies have shown that mild cortisol deficiency related to a hypothalamic-pituitary defect may contribute to CFS. If testing shows cortisol deficiency, treatment with hydrocortisone can help relieve symptoms.⁴⁴

Although there is no cure for CFS, several other treatments have been shown to help some patients, including graded exercise therapy and cognitive behavior therapy. Potentially helpful medications include antidepressants, injections of high doses of immunoglobulin, intramuscular injections of magnesium sulfate, and consumption of high doses of essential fatty acids. Because serotonin levels are abnormal in patients with CFS, the serotonin precursor 5-hydroxytryptophan can be helpful in some people. Homeopathic medicine can also diminish your symptoms of fatigue.

Because the symptoms of hypothyroidism and CFS are quite similar, some patients with underactive thyroid may be misdiagnosed as having CFS. In such patients, the right treatment is achieving and maintaining a perfect thyroid balance with thyroid hormone therapy. Also, if you suffer from both

CFS and a thyroid imbalance, you will not get full benefit from the currently available treatments for CFS unless your thyroid imbalance has been properly corrected and monitored.

Hypoglycemia: The Mysteries of Blood Sugar

Another cause of fatigue and mood changes that can lead to confusion and misdiagnosis is hypoglycemia. Hypoglycemia (a below-normal blood sugar level) can cause fatigue, headaches, and rapid heartbeat. Other common symptoms of hypoglycemia are an inability to concentrate, confusion, irritability, bizarre behavior, trembling, anxiety, sweating, and hunger. The symptoms occur because the brain is not receiving enough sugar, and ordinarily will resolve rather quickly when you eat carbohydrates.

Many of the symptoms of hypoglycemia result from the activation of the autonomic nervous system, the same system that causes some of the physical symptoms of an anxiety disorder. Hypoglycemia, widely publicized in popular magazines and books, has been often cited as a common cause of tiredness, poor work and study performance, and sexual dysfunction. As a result, many people suffering symptoms due to depression or anxiety disorder are erroneously diagnosed as hypoglycemic.

The standard test for hypoglycemia is an oral glucose tolerance test, which consists of measuring blood sugar before and several times after the ingestion of glucose. In healthy people not suffering from hypoglycemia, the blood sugar rises after glucose ingestion and then gradually decreases to low levels two to three hours after the ingestion of sugars. After the drop in blood sugar, the levels will typically return to normal. It has been estimated that 20 percent of normal healthy people have a reactive low blood sugar two to three hours after food intake but do not experience symptoms.⁴⁵ Doctors will make the diagnosis of true reactive hypoglycemia only if you have experienced symptoms when the blood sugar is low during the glucose test.

I have seen quite a few people who were labeled hypoglycemic for a long time, yet the source of their symptoms turned out to be depression or an underactive thyroid. Even though the explosive epidemic of mislabeling seemingly everyone as hypoglycemic that occurred in the 1970s and 1980s⁴⁶ is slowly receding, this problem has continued to affect a substantial number of people. If you were diagnosed as hypoglycemic based only on symptoms, or if your glucose test was not interpreted correctly, you may become debilitated by the diagnosis itself. Many supposed hypoglycemics refuse to eat in restaurants, don't drive a car, or become "dietary cripples" who are afraid of certain food choices.

If true hypoglycemia is not the reason for the symptoms of fatigue and anxiety after a meal, why, then, do some people experience fatigue, sleepless-

ness, difficulty concentrating, and even rapid heartbeat and sweatiness after eating? If you absorb sugar faster than average, insulin levels in response to the sugar surge are, in general, higher. This often happens when you have too much thyroid in your system. The high increase in insulin levels in your bloodstream typically causes the blood sugar to drop quickly after the abrupt rise. Even if you do not experience clear-cut low blood sugar, the rapid decline of blood sugar could trigger an exaggerated response of the adrenaline-activated nervous system, which results in symptoms. In essence, a person can experience symptoms of hypoglycemia without actually having hypoglycemia.

The timing of symptoms is important in differentiating true hypoglycemia from what I call “rapid blood sugar drop syndrome.” With true reactive hypoglycemia, symptoms typically begin three hours after meals. They also coincide with a low blood sugar reading. In contrast, symptoms related to “rapid blood sugar drop syndrome” generally occur earlier, one hour after eating.

The type of foods consumed determines the magnitude of the rise in blood sugar. Researchers have developed a scale, called the glycemic index, that scores foods according to the degree of rise in blood sugar that occurs after they are eaten. The higher the glycemic index, the higher the insulin response and the more rapid the subsequent fall in blood sugar. Simple sugars have a higher glycemic index than complex carbohydrates. What determines the glycemic index is not only the type of carbohydrates (simple versus complex) but also the amount of fat, protein, and fiber, as well as the method of food processing and cooking. Thus, to avoid a rapid drop in blood sugar, select foods that have the lowest glycemic index. (See Chapter 7 for a more thorough discussion of the effects of different foods on blood sugar.)

Equally disturbing are vague suggestions that connect hypoglycemia to hypothyroidism⁴⁷ and imply that hypoglycemia is a common occurrence in hypothyroidism. These have led some people to conclude that a person suffering from symptoms of hypoglycemia could be treated with thyroid hormone. Thyroid specialists often see patients who were diagnosed as hypoglycemic because of symptoms of fatigue, headaches, and sleep disturbances, and who were then inappropriately placed on thyroid hormone treatment for their condition.

Making the Diagnosis

To determine the likelihood that you are suffering from chronic fatigue syndrome, fibromyalgia, hypothyroidism, or a combination of these conditions, complete the following questionnaires and score yourself for each of the symptoms you are experiencing.

QUESTIONNAIRE A:**SYMPTOMS COMMON TO FIBROMYALGIA,
CHRONIC FATIGUE SYNDROME, AND HYPOTHYROIDISM**

Indicate whether you have been experiencing each of the following symptoms. When you answer no, proceed to the next symptom; when you answer yes, score the severity of your symptom (1 = mild, 2 = moderate, 3 = severe) before proceeding to the next one.

Fatigue	Yes	No	_____
Lack of endurance	Yes	No	_____
Dizziness	Yes	No	_____
Joint stiffness	Yes	No	_____
Depression	Yes	No	_____
Anxiety	Yes	No	_____
Difficulty concentrating	Yes	No	_____
Muscle weakness	Yes	No	_____
Headaches	Yes	No	_____
Worsening PMS	Yes	No	_____
Mood swings	Yes	No	_____
Irritability	Yes	No	_____
Word mix-ups	Yes	No	_____
Joint pains and aches	Yes	No	_____
Swollen fingers	Yes	No	_____
Brain fog	Yes	No	_____
Panic attacks	Yes	No	_____
Memory blanks	Yes	No	_____
TOTAL SCORE			_____

Add up your total score. If it is higher than 15, you may be suffering from fibromyalgia, chronic fatigue syndrome, or an underactive thyroid and should proceed to questionnaires B, C, D, and E.

QUESTIONNAIRE B:**CHRONIC FATIGUE SYNDROME/FIBROMYALGIA**

Have you suffered, for six months, from fatigue occurring even at rest and not relieved by rest that has affected your ability to participate in your usual work, social, or personal activities? (If you answer yes, give yourself 10 points.)

Yes No ____

Do you feel exhausted, dizzy, and about to faint after a hot shower? (If you answer yes, give yourself 5 points.)

Yes No ____

Do you feel drained and exhausted for more than twenty-four hours after exercising? (If you answer yes, give yourself 5 points.)

Yes No ____

Did your symptoms begin abruptly? (If you answer yes, give yourself 5 points.)

Yes No ____

Have you experienced since the onset of the fatigue, but not before, any of the following symptoms in a persistent or recurrent fashion? If so, score the severity of each symptom as follows: 1 = mild, 2 = moderate, 3 = severe.

Changing joint pains

Yes No ____

Bad days, good days

Yes No ____

Trouble sleeping in the middle of the night

Yes No ____

Increased thirst

Yes No ____

Dry eyes, dry mouth

Yes No ____

Visual blurring

Yes No ____

Rapid heartbeat

Yes No ____

Loss of appetite

Yes No ____

Nausea

Yes No ____

Severe malaise

Yes No ____

TOTAL SCORE

If your score is 25 or higher, you may be suffering from either fibromyalgia or chronic fatigue syndrome and should proceed to questionnaire C.

QUESTIONNAIRE C: FIBROMYALGIA

Have you had for at least the past three months pain or
 achiness in many parts of your body, affecting both
 sides of the body (right and left), above and below the
 waist and in the midbody (that is, any part of the
 spine)? (If you answer yes, give yourself 5 points.) Yes No ____

Has your doctor been able to trigger pain in at
 least eleven places by pressing on the eighteen
 spots on your body called trigger points? (If you
 answer yes, give yourself 10 points.) Yes No ____

Have you experienced any of the following
 symptoms? If so, score the severity of each
 symptom as follows: 1 = mild, 2 = moderate,
 3 = severe.

Muscle spasms Yes No ____

Numbness and tingling Yes No ____

Sensitivity of your eyes to light Yes No ____

Bruising Yes No ____

Irritable bladder Yes No ____

Irritable bowel Yes No ____

Eye pains Yes No ____

TOTAL SCORE ____

If your score is 25 or higher, you may be suffering from fibromyalgia.
 Regardless of the score, proceed to questionnaires D and E.

QUESTIONNAIRE D: CHRONIC FATIGUE SYNDROME

Do you experience recurrent or persistent fevers?

(If you answer yes, give yourself 10 points.)

Yes No ____

Have you had tender lymph nodes lasting for several weeks? (If you answer yes, give yourself 10 points.)

Yes No ____

Have you experienced any of the following symptoms? If so, score the severity of each symptom as follows: 1 = mild, 2 = moderate, 3 = severe.

Night sweats

Yes No ____

Sore throat

Yes No ____

Increased thirst

Yes No ____

Frequent infections

Yes No ____

TOTAL SCORE

If your score is 25 points or higher in questionnaire D, you may be suffering from chronic fatigue syndrome. Now, regardless of your scores in questionnaires B, C, or D, proceed to questionnaire E.

QUESTIONNAIRE E: HYPOTHYROIDISM

Have you experienced any of the following symptoms for at least one month? When you answer no, proceed to the next symptom; when you answer yes, score the severity of your symptom (1 = mild, 2 = moderate, 3 = severe) before proceeding to the next one.

Hair loss

Yes No ____

Dry skin

Yes No ____

Constipation

Yes No ____

Slow pulse

Yes No ____

Increased appetite

Yes No ____

Weight gain

Yes No ____

Sleep apnea (heavy snoring and brief, intermittent cessation of breathing during sleep)

Yes No ____

Yellow palms

Yes No ____

Muscle cramps

Yes No ____

Increased sleep

Yes No ____

TOTAL SCORE

If you score higher than 10 in questionnaire E, you may be hypothyroid. If you also scored 25 or more in questionnaire C or D, you may have both hypothyroidism and chronic fatigue syndrome or fibromyalgia.

Potential Causes of Fatigue

DISORDERS OF THE ENDOCRINE SYSTEM

- Hypothyroidism
- Hyperthyroidism
- Adrenal insufficiency (such as Addison's disease)
- Pituitary deficiency (such as shortage of growth hormone)
- Multiple deficiencies of pituitary function
- Cushing's disease
- Diabetes

DISORDERS OF THE IMMUNE SYSTEM AND INFECTIONS

- Lupus
- Polymyositis (a rare muscle disease); dermatomyositis (a rare disease causing weak muscles and a skin rash)
- Sjögren's syndrome
- Polymyalgia rheumatica
- Pernicious anemia
- Rheumatoid arthritis
- Epstein-Barr virus infection
- HIV infection; AIDS
- Other viral illnesses
- Tuberculosis
- Lyme disease
- Fungal disease

DISORDERS OF BRAIN CHEMISTRY

- All depressive disorders
- Mood swing disorders

MISCELLANEOUS CONDITIONS

- Fibromyalgia
- Chronic fatigue syndrome
- Anemia
- Cancer
- Alcoholism
- Heavy-metal toxicity
- Medications (beta-blockers; antidepressants)
- Drug abuse
- Liver disease
- Heart failure

- Chronic lung problems
- Sleep apnea
- Parkinson's disease
- Multiple sclerosis
- Lymphoma

Important Points to Remember

- If you are suffering from fatigue, do not assume that your other symptoms are caused by the fatigue. To help your doctor uncover the source(s) of your fatigue, describe *all* your symptoms as precisely as possible.
- To find out what is causing your fatigue, you and your doctor may have to go through a detective-type process of checking the many organ systems that can produce fatigue.
- If no obvious disorders are found to cause your fatigue, disorders of the endocrine system such as deficiencies in the pituitary and adrenal glands should be considered.
- Remember, a person may have more than one disorder causing fatigue. Thyroid imbalance can coexist with other conditions that typically cause fatigue, including fibromyalgia and chronic fatigue syndrome.
- Keep the tripod of wellness (the endocrine system, the immune system, and the brain) in mind while you are trying to find out what is causing your fatigue.
- If you have fibromyalgia, a thyroid imbalance could be the cause.
- Do not easily accept the diagnosis of hypoglycemia unless your symptoms coincide with low blood sugar levels.
- To avoid being misdiagnosed, use symptom questionnaires that help you determine which one of the three overlapping syndromes (fibromyalgia, chronic fatigue syndrome, and thyroid imbalance) is causing your symptom(s).

PART III

WOMEN'S THYROID PROBLEMS

Your Symptoms Are Not All in Your Head

PREMENSTRUAL SYNDROME AND MENOPAUSE:

Tuning the Cycles

From puberty to menopause, women's bodies and brains are influenced by continuous cycles of hormones. These hormones are crucial not only for reproduction but also for the nature of a woman's feminine identity. Sex hormones—including estrogen, progesterone, testosterone, and DHEA—also play an important role in thinking and memory, and they interact with chemicals in the brain that regulate mood, emotions, and sex drive.

The well-defined pattern of women's monthly cycles is tightly regulated by messages from the hypothalamus and pituitary gland. Even though the thyroid system and the sex hormone system are two independent systems governed by the same "master gland," the pituitary, there are important relationships between the two.

First, thyroid hormone affects the levels of sex hormones and the way they work in your body. A thyroid hormone imbalance frequently causes either heavy, prolonged menstrual periods (especially in hypothyroidism) or brief, scanty menstrual periods, or even cessation of periods (in hyperthyroidism and also in severe hypothyroidism).¹ Thyroid hormone is also critical for conception and for a successful, healthy pregnancy.

Second, sex hormones seem to play a role in the occurrence of thyroid disease. In females, autoimmune thyroid disorders become more common at puberty. As a woman enters her reproductive years, the frequency of both Hashimoto's thyroiditis and Graves' disease increases sharply. At menopause, the frequency of Hashimoto's thyroiditis and low-grade hypothyroidism also increases, with 13 to 15 percent of postmenopausal women having some thyroid hormone deficit.² One study showed that Hashimoto's thyroiditis occurred more frequently in women who had a longer reproductive span (that is, more years between puberty and menopause).³

Other facts clearly indicate that sex hormones have a major effect on the

activity of the thyroid gland and may even affect the triggering of an autoimmune reaction in the thyroid. For instance, many women with dormant Graves' disease may have a flare-up in the first trimester of pregnancy or after delivery. The important hormonal changes that occur after delivery also seem to account for the high frequency of postpartum thyroid disease. The triggering or worsening of thyroid conditions throughout these periods of hormonal shifts is probably related to effects of sex hormones on the immune system.

Sex hormones also have a significant effect on how a thyroid imbalance is manifested physically and mentally. The chemistry of both brain and body is influenced in normal and abnormal conditions by the thyroid and sex hormones. A thyroid hormone imbalance will exacerbate the symptoms of hormonal shifts, so a woman who usually has few or no symptoms related to hormonal changes will begin to experience more symptoms when a thyroid imbalance occurs.

These complex ways in which thyroid problems cause escalation of symptoms are most apparent during three important periods of the hormonal cycle: the luteal phase of the menstrual cycle (after ovulation, when an egg is released—the time when most women experience premenstrual syndrome, or PMS), the postpartum period, and menopause. This chapter focuses on the relationship between the thyroid, luteal phase syndrome (PMS), and menopause. (Postpartum depression is discussed in Chapter 13.)

PMS: Chemical Imbalance or Hormonal Shifts?

During the last part of the menstrual cycle (that is, five to seven days prior to the menstrual period), many women suffer mood swings, irritability, anger, loss of energy, difficulty concentrating, appetite changes (particularly food cravings), anxiety, depression, loss of interest in ordinary activities, exhaustion, and sleep pattern changes, including insomnia. This mix of symptoms, casually called premenstrual syndrome, is reminiscent of a depressive type of cyclic mood disorder. During the course of the reproductive years, this cyclic change in emotions and mood often begins in an insidious fashion. Gradually, women who experience PMS learn to cope with the episodic and recurrent suffering.

Because the symptoms of PMS are similar to those of cyclic depression, it's often thought that a subtle chemical imbalance is responsible for the mood effects. PMS tends to become more noticeable to the woman during the last few days of the menstrual cycle. This is when estrogen levels, after increasing following ovulation, tend to decline. At the same time, the levels of progesterone, which had been produced in great quantities in the second part of the menstrual cycle, tend to decrease as well. These hormonal shifts have been

thought to be the basis for premenstrual syndrome. Hormonal shifts also explain the physical discomfort—including bloating, aches and pains, breast tenderness, headaches, migraines, and gastrointestinal symptoms—that you may experience during PMS.

Premenstrual syndrome is one of the least understood syndromes in medicine. Endocrinologists, reproductive endocrinologists, psychiatrists, and gynecologists have all attempted to understand the basis for the syndrome, yet none has been able to declare authoritatively what causes PMS. For the most part, the various specialists have addressed only the facets of the syndrome that apply to their field. Endocrinologists have found multiple abnormalities that could account for the fluid and salt retention that occurs during the premenstrual period. Reproductive endocrinologists and gynecologists have explained the changes in hormone levels occurring in the last part of the menstrual cycle. Psychiatrists have focused on the emotional aspects of premenstrual syndrome and have provided some criteria for making a correct diagnosis.⁴

Researchers from the various fields have proposed that the cause of premenstrual syndrome could be an increased sensitivity in some women to the hormonal shifts of the menstrual cycle. Research has shown that the functioning of the serotonergic system in the brain changes throughout the menstrual cycle, and this has to do with the changes in hormone levels. Estrogen enhances the activity of serotonin in certain regions of the brain and regulates mood, emotion, and cognition.⁵ Estrogens also regulate interactions between the brain and the endocrine system. Some women are more sensitive to the serotonin changes caused by hormones, making them more likely to suffer from PMS. In essence, some women may have an underlying subtle chemical imbalance that predisposes them to suffer PMS. Thyroid hormone, cortisol, and sex hormones (that is, estrogen, progesterone, and androgens) regulate to some extent the amount of chemicals in the brain and their effects on the body and mind.

As estrogen levels decline in the premenstrual period, serotonin activity declines as well, which explains the changes in mood and behavior. The rise in progesterone that occurs after ovulation also contributes to the decline in serotonin activity and affects the neurotransmitter GABA, which is equally involved in regulating mood, emotions, and eating behavior. In fact, progesterone causes the same negative effects on mood as benzodiazepines, barbiturates, and alcohol.⁶

Recent research has shown that the hormone leptin, which regulates appetite and metabolism, contributes to the occurrence of PMS. Leptin regulates reproduction and emotions as well. Patients suffering from PMS have higher leptin levels during the second part of the menstrual cycle.⁷ They tend

to eat more fat, more simple sugars, and less protein before their menstrual periods, and to eat more often, making it hard for them to follow a weight management program.

The importance of neurotransmitter changes and their interactions with hormones can be highlighted by the fact that being overweight makes a woman more predisposed to have PMS. Recent research has shown that PMS is three times more common in obese women than in nonobese ones.⁸ Tobacco smokers, too, are more prone to suffering from PMS than nonsmokers. If you suffer from PMS, you also will be more likely to consume heavy amounts of alcohol.⁹

Nearly 50 percent of all women experience some discomfort during the premenstrual period,¹⁰ but the majority of them have mild changes that they perceive as normal and similar to what other women experience. When asked whether they have symptoms of premenstrual syndrome, such women will typically respond, "Oh, yeah, I have those." But in some cases the symptoms are far more severe.

A menopausal woman who suffered from PMS for years told me once:

I am so happy to not have periods any longer because my PMS was severe. I would describe it as viciousness, vicious irritability around PMS! It was like, "Mark your calendar, don't come near me." I didn't want to go out in public during those times because I was afraid I'd have an altercation—I'd say something to somebody because they looked at me wrong."

Yet this woman kept her suffering a secret. She never sought medical help.

As with many mental conditions, psychiatrists have proposed rigid criteria for determining whether a woman has PMS. According to psychiatrists, you are considered to be a PMS sufferer only if you have several severe symptoms and only if you receive the diagnosis of "late luteal phase dysphoric disorder." Just 3–8 percent of women meet these criteria. However, according to the much less rigid criteria used by the American College of Obstetricians and Gynecologists, you will be considered to be a PMS sufferer if you have only one mood-related symptom and one physical symptom. As you can see, you may be suffering from PMS, but you may not receive the proper diagnosis if you are evaluated by a doctor who uses the psychiatric criteria. Research has suggested that 13–18 percent of women have premenstrual symptoms severe enough to cause distress and suffering.¹¹ Yet many of these women are dismissed as being normal. You need to record your symptoms and the way you feel in daily diaries and use the less rigid criteria for diagnosis to get the help you need.

Premenstrual symptoms tend to worsen as you get older. They worsen

even more during the time a woman is about to become menopausal, so the symptoms of PMS and perimenopause may become intermingled.¹² At this stage of their reproductive lives, women are often surprised to hear that PMS symptoms could be causing their discomfort. The symptoms may become continuous as their ovulation becomes irregular and their menstrual periods become heavier and irregular.

There is in fact a tight link between suffering from PMS and the likelihood of experiencing menopausal symptoms including hot flashes, poor sleep, decreased libido, and even menopausal depression. Research has shown that one of four women suffering from perimenopausal depression had previously suffered from PMS, but less than one of ten depression-free menopausal women had experienced PMS.¹³ This tells you that if you have suffered from PMS, whether the root of the problem is a thyroid imbalance or not, you become more vulnerable to perimenopausal depression.

Women who suffer from chronic, undiagnosed mood or anxiety disorders in addition to having PMS can find it particularly difficult to get diagnosed properly. If you already suffer from depression or an anxiety disorder, you will be more likely to suffer from PMS. Clear-cut exacerbation of depressive symptoms occurs in 80 percent of patients suffering from depression.¹⁴ In these women, the emotional suffering related to their mood disorder worsens in this vulnerable period of the menstrual cycle. For several days before the menstrual period, they experience a mixture of discomfort and suffering related to both the PMS and the mood disorder, with the symptoms sometimes becoming severe and disabling. This intensification of symptoms represents a strong argument in favor of a subtle chemical imbalance in the brain being at the root of PMS.

Thyroid Hormone Imbalance: The Link to PMS

Endocrinologists have studied various facets of the body's hormonal systems in order to explain some of the symptoms occurring in premenstrual syndrome. They have found some abnormalities in many hormonal systems, including the thyroid system. Since thyroid hormone affects levels of brain chemicals known to affect emotions and mood, several researchers have attempted to determine whether PMS could be caused by a thyroid imbalance.

Dr. Peter Schmidt and his coworkers from the National Institutes of Health showed in a study of a large number of women fulfilling the clinical criteria of premenstrual syndrome¹⁵ that 10.5 percent of women with PMS had a thyroid imbalance, frequently low-grade hypothyroidism. Utilizing TRH stimulation testing, the most sensitive test available for detecting a very minor thyroid hormone deficit, they also found that 30 percent of

women with PMS who have normal basal TSH levels had a minor thyroid imbalance. The frequency of low-grade hypothyroidism determined by TSH measurement in large samples of women of reproductive age has generally been 3.6 to 7.5 percent, so the rate found in this study was higher than expected.

An open trial conducted by Dr. Nora Brayshaw showed that a high dose of thyroid hormone caused relief of symptoms in women with PMS. Most of the women studied had low-grade hypothyroidism.¹⁶

These results suggest that thyroid imbalance, including low-grade hypothyroidism, may play a role in the occurrence or exacerbation of PMS in some but not all women. It is possible that a deficit of thyroid hormone in the brain is the basis of premenstrual syndrome in some women. The similarities between the symptoms of hypothyroidism and those of premenstrual syndrome make this hypothesis plausible. Some of the common symptoms include weight gain, poor regulation of temperature, lethargy, irritability, mood swings, and anxiety. The effectiveness of thyroid hormone treatment in some women who suffer from PMS but have normal thyroid glands is reminiscent of the effectiveness noted in women suffering from depression.

Martha, a thirty-two-year-old manager, had never had symptoms of PMS until two years before her gynecologist made the diagnosis of hypothyroidism. She said:

Initially, I was happy most of the time. Then, two years ago, I started getting tired and depressed and having headaches before my period. Little by little, I became very emotional and couldn't get out of bed. I would get up, shower, get dressed, and just sit there.

For several months, my periods would last two weeks, so it was like basically the whole month on PMS. I would be irritable the whole time. When I was diagnosed with hypothyroidism and started thyroid hormone treatment, my symptoms started decreasing. My headaches started decreasing, and then my symptoms went away.

Martha's case is not unique. Women may visit their doctor because of PMS symptoms and turn out to have a thyroid disorder.

Many women diagnosed with Graves' disease who have had some experience with PMS state that Graves' disease can be described as PMS multiplied many times. The symptoms of hyperthyroidism and PMS may be so similar that you may attribute symptoms of hyperthyroidism to worsening PMS. Some women with mild overactive thyroid will notice thyroid-related symptoms only in the premenstrual period.

How Thyroid Dysfunction Can Exacerbate PMS

For women suffering from mild premenstrual syndrome, the occurrence of a thyroid imbalance (either hypothyroidism or hyperthyroidism) may aggravate PMS symptoms.

Billie was thirty-two when her gynecologist diagnosed a goiter. Thyroid testing showed hypothyroidism. Billie had started having PMS at the age of twenty but coped with the symptoms quite well. Over the preceding three-year period, though, her symptoms had gradually worsened. She saw numerous physicians, who recommended different treatments without results. The worsening of PMS resolved when her hypothyroidism was corrected.

Before treatment, Billie described her symptoms as follows:

I have been suffering from these symptoms for some time. I wanted to break up with my boyfriend, or I didn't like him or something. Then I started noticing that, even when he was gone, I still had that. My symptoms became much worse in the past three years. It was like clockwork. Same feelings, same anxiety. A physician diagnosed PMS and prescribed Prozac. Prozac helped a little, but then I had side effects. I stopped taking it.

I had gotten it down pretty much. Twenty days out of the month I am okay. I know any day I'm waiting for it to come. All of a sudden, it feels like something comes in my body and takes over.

My mind all of a sudden changes. My appetite goes crazy. I never can get satisfied. The imbalance almost drives me crazy. My emotions become overwhelming.

It comes and goes in waves. I would cry and not know why. One minute I would be on top of the world and be doing things with my family, and then five minutes later something would make me mad and I would be yelling at my friends or husband. I'm not the same person. It's like dual personalities.

I went to a PMS specialist. He handed me a brochure and said, "This is what PMS is, and I'm sorry I have nothing to tell you. Take these birth control pills and see if that helps." They made me tired and made me gain weight. Another doctor read my history and told me that I might be suffering from a bipolar disorder. One doctor told me I had cyclothymia.

Billie's PMS became much more severe at the onset of her hypothyroidism. With thyroid hormone treatment, her mind felt clearer all the time and her symptoms improved. She said:

I stayed on more of an even keel. My appetite was more regular. My energy level was more consistent. I didn't do a lot of things at one time. I was more methodical. I usually try to get a lot of things going at the same time—baking, cooking, doing laundry. I don't tire out as I did. I'm calmer. My responses are more thought out. I didn't have any other improvement like this with any other medication.

Thyroid hormone excess or deficiency gives a different shape to premenstrual syndrome. It not only amplifies preexisting PMS symptoms but also adds new symptoms to the mix. The additional suffering differs depending on the type and severity of the thyroid imbalance.

Whereas hypothyroidism combined with PMS means more sudden depressed moods, crying spells, feelings of despair and loss of control, sleepiness, guilt feelings, and anger, the combination of hyperthyroidism and PMS results in more anxiety symptoms, restlessness, and altered sleep patterns. Hyperthyroid women experiencing panic attacks may find that those attacks increase in both frequency and severity during the last part of the menstrual cycle. In general, the mood swings, irritability, and anger become mixed with a higher degree of anxiety and agitation during the premenstrual period.

How to Cure Your PMS

If you have a thyroid imbalance and have suffered from PMS, obviously the first step in improving or curing your PMS is to properly address the thyroid imbalance and have it adequately corrected. If you have an underactive thyroid, you are more likely to benefit from a combination of T4 and T3. The active form of thyroid hormone, T3, enhances serotonin activity in the brain and helps alleviate the mood-related symptoms. However, even with proper thyroid treatment, you may continue to suffer from residual PMS symptoms. To cure these symptoms, you may need to take a contraceptive pill containing a low dose of estrogen to prevent the hormonal swings related to ovulation. This has become the most widely accepted treatment for PMS. Oral contraceptives containing only progestin do not improve PMS symptoms and may even make things worse. Newer formulations such as Yasmin, containing low-dose estrogen in conjunction with the progestin drospirenone, help the most.¹⁷ This kind of oral contraceptive also reduces the water retention so common in PMS.

Selective serotonin reuptake inhibitor (SSRI) antidepressants are quite effective in treating both the mood symptoms of PMS and physical symptoms such as bloating and headaches. Research has shown that more than 60 percent of patients suffering from PMS respond to these medications.¹⁸ Sertraline, fluoxetine, and extended-release paroxetine have been approved by the U.S. FDA for PMS. One study showed that citalopram is effective in patients who failed to respond to other SSRIs. These drugs can be effective when taken intermittently in the second phase of the menstrual cycle. However, some women do better when they take the SSRI continuously.¹⁹ Tricyclic antidepressants can be used as an alternative, but I do not recommend anti-anxiety medications such as buspirone or alprazolam, as they are seldom effective.

Changing your diet can help with PMS, too. Increase your consumption of soy foods, which are rich in proteins called isoflavones. They improve serotonin activity in your brain and can reduce PMS symptoms.²⁰ Increase your calcium and vitamin D intake. According to recent research published in the *Archives of Internal Medicine*, low calcium intake and vitamin D deficiency contribute to the occurrence of PMS.²¹ Women suffering from PMS generally have a much lower calcium intake than women not suffering from PMS. Calcium supplementation of 1,200–1,600 milligrams a day has been shown to help PMS symptoms. You also need to take adequate amounts of chromium, copper, and manganese as blood levels of these minerals have been found to be low in patients suffering from PMS.²² Nitric oxide is released in high amounts as a result of hormone swings²³ in PMS sufferers and could be contributing to the occurrence of PMS symptoms.

If you suffer from irritable bowel syndrome, you are more likely to experience depression, anger, and cognitive impairment premenstrually.²⁴ You then need more aggressive treatment, including practicing relaxation and following a strict diet. You also need to stop smoking and engage in a weight management program. Losing weight will improve your PMS symptoms tremendously. Supplementation of 50 to 100 milligrams of vitamin B₆ in conjunction with 200 milligrams of magnesium is also quite helpful.²⁵ These supplements improve the anxiety symptoms related to PMS.

Research has demonstrated that chiropractic therapy can be highly effective in reducing PMS symptoms.²⁶ Acupuncture, which works on the serotonergic and opioid neurotransmitter systems, has been shown to significantly improve symptoms in 77.8 percent of patients, compared to 5.9 percent of women treated with placebo.²⁷ Other medications can be of some benefit, too. Spironolactone, a potassium-sparing diuretic, helps some patients, but the benefits are less than obtained with an SSRI. In some severe cases, growth hormone treatment has been shown to significantly improve PMS. Cognitive behavior relaxation therapy, aerobic exercise, L-tryptophan, and complex carbohydrate drinks may also be of use.

The Thyroid and Perimenopause

Endocrinologists have noticed that the occurrence of hypothyroidism can be a more significant stress in the perimenopausal period (the roughly five to ten years leading up to the onset of menopause) than when it occurs at other times. Also, the symptoms of hypothyroidism may intensify as a result of hormonal shifts that precede menopause. As estrogen levels decline prior to menopause, lower serotonergic activity in the brain caused by lower estrogen will make you more sensitive to the effect of low thyroid on mood and

emotions. A long-standing, untreated thyroid condition during the perimenopausal period can cause more depression, irritability, and anger and may trigger personal problems and more menopausal symptoms.

Symptoms of menopause and hypothyroidism are astonishingly similar, leading many patients suffering from mild hypothyroidism to be dismissed as perimenopausal. If a woman is in the perimenopausal or postmenopausal period, the first thing that tends to come to a gynecologist's mind is that symptoms of mood swings or fatigue are due to a hormonal imbalance. A woman may even suggest this possibility to the physician. Should these symptoms persist despite adequate hormone replacement therapy, only an astute and thorough gynecologist might eventually test the thyroid as a possible reason for the symptoms.

The Thyroid's Effects on Menopause

In the next two decades, nearly forty million American women will face menopause. For most women, the menopause transition is a physiological reality. It is not only a marker for the end of the reproductive years but also a critical period during which hormonal and sociocultural influences reshape how a woman perceives herself. Wide fluctuations of hormone levels affect your neurotransmitters and may make you more susceptible to depression and anxiety. Vasomotor instability may make you experience hot flashes and night sweats. Your sleep may become disturbed, and your sexuality may change. You are at a higher risk for bone loss, impaired cognition, and cardiovascular disease. Your metabolism slows down, and you may begin to gain weight.

Through this transition, you will also have a higher risk of developing a thyroid imbalance. Because of the hormonal changes and other poorly understood reasons, women become more vulnerable to immune attacks on the thyroid when they become menopausal. The frequency of low-grade hypothyroidism increases sharply at menopause, with at least one in eight women becoming afflicted with hypothyroidism.²⁸

A thyroid imbalance often makes symptoms of menopause worse, as its effects may prevent women from being able to cope with the broad range of physical and emotional stresses that occur with this transition. Thyroid disease during menopause may have a significant effect on how a woman perceives her menopausal symptoms and even on the nature of those symptoms. Even low-grade hypothyroidism can ignite hot flashes, sleep problems, depression, and worsening anxiety.

Nora, a forty-nine-year-old woman, described to me the mix of symptoms that she experienced when she became menopausal a year earlier:

My periods started being further and further apart, and coinciding with an increase in symptoms of fatigue. Not fatigue like, "Oh, I just can't do anything today," but sleepiness and tiredness that just had to be addressed. I would sometimes wake up in the morning, have my cup of coffee, do whatever, and not have the energy to get dressed. I would lie back down for another hour. Maybe around noon I would finally feel refreshed. It really took a long time to get recuperated, I guess. I would go to the mall for two hours and come home and crash!

My hot flashes have been a subject matter for jokes. I think I had hot flashes for about six months. They were increasing in intensity, and I realized it wasn't a joke. I would want to cry when I felt them coming on, because I knew that for up to the next 20 minutes or so, I would not be able to think about anything but cooling off. I was carrying the fan around, people were laughing at me, and I would laugh back. This was on top of the lethargy and the three-hour naps, sometimes two times a day! If it hadn't been for the menopause, things hadn't been accentuated enough for me to take action and have my thyroid evaluated.

I was never depressed, as far as I knew. But then when the menopause hit, I felt like I was becoming seriously depressed. That bothered me, and it concerned me, and I wondered if it would ever change.

For Nora, hormone replacement therapy helped only a little. Through the transition her thyroid gland became underactive and caused her to have an escalation of symptoms. Only after addressing and treating both components did she feel normal again. She said, "I just felt more well-rounded, more balanced, more optimistic." Her fatigue, depression, and hot flashes all went away.

Today, many women live one-third of their lives or more after menopause. Despite the recognition of the need for comprehensive care for women and of the importance of preventive medicine and education to ensure women's good health, health care delivery systems have not emphasized the importance of early detection and adequate treatment of thyroid imbalances. Education about thyroid disease should be a part of a woman's health program.

Thyroid Patients in the Hormonal Transition

If you have suffered from a thyroid imbalance during the reproductive years, you are more likely to experience menopausal symptoms such as headaches, depression, and constipation when you reach the transition and afterward.²⁹ Even if your thyroid levels have been stable with treatment prior to menopause, the activity of the immune system can change during the transition,

destabilizing your thyroid levels and making your menopausal symptoms worse.

The physical and emotional symptoms of menopause have been widely assumed to be due to a decline in estrogen levels. For most women, however, hormonal changes probably do not account for all the changes in well-being or the physical symptoms of menopause. If they did, all women would experience menopausal symptoms when they reach the transition. In fact, only 50 to 60 percent of women suffer from hot flashes. Not all women become depressed or emotionally unstable. What does seem to have a great effect on the occurrence of menopausal symptoms is the amount of stress experienced prior to menopause. Studies done in Japan and the United States have shown that the expression of the symptoms of menopause and the frequency of these symptoms differ significantly between Japanese and American women.³⁰ For instance, approximately 38 percent of American women experienced a lack of energy, compared to only 6 percent of Japanese women. Some 30 percent of American women experienced irritability, whereas this symptom was reported by only 12 percent of Japanese women. Many other symptoms of menopause, such as depression and trouble sleeping, were on average three times more common in American women than in Japanese women. American women also complained of more hot flashes and night sweats than their Japanese counterparts. The differences are so striking that they can be explained only by sociocultural factors.

One study found that stress from bereavement, divorce, or friends moving away is closely associated with the psychological and physical symptoms of menopause.³¹ Other factors, such as low educational and socioeconomic status, are also associated with more symptoms of depression than are generally found among middle-class women. Women with lower monthly incomes were shown to have a higher incidence of nervous complaints at menopause.³²

People with a tendency toward mood swings can feel helpless to anticipate and cope with major life changes. Consequently, if your thyroid condition has made you more prone to becoming depressed, you may feel unable to control the changes that occur during menopause. You are also likely to perceive those changes in a more negative way. The depression worsens, and the stress is perceived as overwhelming. Women who are more affected by menopausal symptoms are likely to be those who are under high levels of stress and/or who have particularly negative beliefs about menopause. Christiane Northrup, a doctor and women's health specialist, pointed out that "expectations of problems in menopause lead to problems."³³

Get the Help You Need Through the Transition

As explained earlier, if you have suffered from a thyroid imbalance and you are perimenopausal or postmenopausal, you are more likely to have escalation of symptoms related to both lack of estrogen and thyroid-related symptoms. Even if your thyroid levels become normal with treatment, you will be more likely to experience hot flashes, night sweats, sleep disturbances, low mood, and irritability. You probably sense that estrogens could improve many of the symptoms but wonder whether hormone replacement therapy (HRT) is the right choice for you. Emerging research shows that estrogen may increase your risk for breast cancer and may be associated with cardiovascular disease. You need to be well informed concerning benefits and potential adverse effects prior to making the decision about taking estrogen therapy.

The Women's Health Initiative (WHI) study, published in July 2002, reported that there was a decreased risk of colorectal cancer and osteoporotic hip fractures in women receiving estrogen in combination with progesterone (0.625 milligram conjugated equine estrogens and 2.5 milligrams medroxyprogesterone). However, there was an increased risk of breast cancer, coronary heart disease, stroke, and blood clots in the veins. According to this study and other research, heart attacks and other vascular problems tend to occur within the first year of treatment.³⁴

The fact of the matter is that the potential health problems seen in some of the women receiving conjugated equine estrogens/medroxyprogesterone combination treatment may not occur in women receiving other dosages of hormones or other forms or types of hormone replacement. For instance, it is possible that transdermal forms of hormone treatment and other ways of taking estrogens are quite safe and do not promote the same side effects reported in the WHI study. It is also possible that the use of low-dose hormone treatment helps without causing major health issues. Despite this, a significant amount of fear has been generated in the public and the medical community, making it difficult for physicians to provide women with the best advice concerning the use of hormones.

A serious problem with the WHI study is that the women studied ranged from fifty to seventy-nine years of age, and many of them were predisposed to having coronary artery disease and cerebrovascular disease to start with. The women who experienced cardiovascular problems were older women who were already at high risk for having these health issues. It is also possible that the culprit in the occurrence of adverse health effects is progesterone. When taken continuously, it may eliminate the benefits of estrogen on the heart and the brain. In fact, women treated with estrogen only in the WHI study have not suffered from a higher occurrence of cardiovascular disease. In contrast

to the WHI study, extensive research has shown that estrogens protect against from having cardiovascular disease. Prior to menopause, women are less likely to have heart attacks than men simply because estrogens have a cardioprotective effect.³⁵

Research has shown that if you start estrogen treatment early, it will lower your cardiovascular risk.³⁶ After menopause, women are more likely to have higher cholesterol levels, high blood pressure, and hardening of the arteries as a result of low estrogens. Estrogens, alone or in combination with progesterone, lower your bad cholesterol (LDL) and increase your good cholesterol (HDL).³⁷ Because the risk of experiencing cardiovascular problems after starting HRT probably applies only to women who have a high risk to start with, before beginning hormonal treatment you need to assess your risk factors, have a good cardiac evaluation, and begin lifestyle changes involving diet, weight loss, regular exercise, smoking cessation, and adequate control of high blood pressure, diabetes, and cholesterol problems.³⁸

As noted, the dose and type of hormone and the delivery system may also have an effect on your risk of cardiovascular problems. At present we have little information concerning any real risk of using the transdermal patch or gel delivery system for HRT. You should use the lowest dose of estrogen that relieves your symptoms, as low-dose estrogen replacement may turn out to be safe and can provide you with what you need to prevent bone loss and cure your symptoms. Also, if you need progesterone treatment, you should take the lowest dose in a cyclic way. You may also use hormone treatment for only a limited period of time.

If you are being treated with thyroid hormone for an underactive thyroid, transdermal estrogen is also preferred because it does not affect the dose of thyroid hormone you need. In contrast, oral estrogen will make your requirement for thyroid hormone higher. Approximately 5 percent of all postmenopausal women receive estrogens in conjunction with thyroid hormone.

The overinflated and distorted negative information provided by the media after the release of the results of the Women's Health Initiative made nearly two out of three women receiving HRT stop the therapy. However, half of those women restarted the treatment months later.³⁹ Instead of stopping HRT because of fear of heart disease and then end up restarting the treatment, it may be wiser to switch to a lower dose.

Another issue related to HRT is the risk of developing breast cancer. Your risk of breast cancer starts going up significantly after five years of treatment, but it may not go up at all if you are not taking progesterone. If a risk exists, it could be related to the dose and the duration of use.⁴⁰ Five years after stopping hormonal replacement therapy, the risk of breast cancer will

be the same as for women who never used HRT.⁴¹ You may wonder whether having a thyroid condition increases your risk of breast cancer. Research conducted in the Netherlands showed that there was no direct relationship between breast cancer and blood markers for autoimmune thyroid disease; however, postmenopausal women who suffer from hypothyroidism seem to be at a slightly increased risk for breast cancer.⁴² Even if a link exists between autoimmune thyroid disease and breast cancer, it is very minimal, and should not affect your decision concerning hormonal therapy.

You need to have a mammogram before you start HRT. If you do not have risk factors for breast cancer, you should repeat the mammogram every two years. When there is increased breast density as a result of estrogen treatment, ultrasound will be useful simply because mammography becomes less reliable as a screening method for breast cancer.

If you have had a hysterectomy and want to take estrogen, it should be taken alone, without progesterone. If you have an intact uterus, however, taking estrogen alone can increase your risk of uterine cancer. The reason is that estrogen causes a thickening and proliferation of the internal lining of the uterus (endometrium), which over time can cause a predisposition to cancer. It is prevented by taking progesterone, preferably in a cyclic fashion, which causes shedding of the buildup.

The drawback of progesterone treatment is its interference with your brain chemistry.⁴³ Progesterone lowers serotonin in the brain, resulting in more symptoms of depression. Women taking estrogens and progesterone may have more symptoms of depression than women taking estrogens alone. Also, the higher the dose of progesterone, the greater the likelihood that a woman will experience depressed mood. On the other hand, progesterone may help relieve hot flashes. There are different progesterone medications. The effect on mood and anxiety symptoms differ from one preparation to the next.⁴⁴ The type of progesterone that you should take will depend on your symptoms, and on how you react to the medication.

If you have mild depressive symptoms, often HRT is enough to treat the depression. Transdermal estradiol and vaginal progesterone are the best combination because vaginal progesterone is less likely to enhance depressive symptoms or to counteract the benefits of estrogens on depressive mood.

The hormone regimen I recommend to my thyroid patients depends on the severity of their hot flashes, whether low mood is a problem, and whether they become emotional, anxious, and fatigued when they take progesterone. A particular hormone regimen may work for one patient but not for another. However, I tend to always recommend a low-dose regimen with a cyclic progesterone treatment for women who need it.

Taking hormones in a low dose in a cyclic fashion does reduce hot

flashes, night sweats, and other menopausal symptoms. It also improves the elasticity of the skin, reduces wrinkling, and makes the skin less dry. Research has shown that estrogen replacement slows skin aging.⁴⁵

HRT improves disruption of sleep in menopausal women. A combination of low-dose estrogen and 100 milligrams of natural micronized progesterone seems to provide a greater benefit to women who have sleep disturbances than the more conventional combination of equine estrogens and medroxyprogesterone.

A new medication called Angeliq, which combines low-dose estrogen (estradiol 1 milligram) and drospirenone (2 milligrams), a new progestin that is less likely to cause blood clots, seems to be a promising new form of HRT with fewer adverse effects.⁴⁶ The new progestin contained in this medication also causes less water retention than other synthetic forms of progesterone.

One reason why menopausal women note a decrease in lean body mass and an increase in fat is the drop in hormone levels. Estrogen treatment in early menopause can help minimize these body changes. Some women think estrogen treatment will make them gain weight, but research has not confirmed that estrogen/progesterone treatment causes weight gain. In fact, if you take estrogens in addition to testosterone, you will increase your lean body mass and reduce fat in all parts of your body.⁴⁷ Your sexuality and quality of life will also improve more than if you take estrogens only.

As you age, dehydroepiandrosterone (DHEA) levels become lower. Low DHEA promotes aging of the body and many age-related disorders that come with it. One study showed that taking 25 milligrams a day of DHEA will reduce age-related decline of the endocrine system and improve physiological functions.⁴⁸ Animal research has also shown that DHEA reduces fat accumulation in certain parts of the body and enhances insulin efficiency. The benefits are similar to the benefits of estrogens.

"Natural" or bioidentical hormone therapy refers to hormone treatment with individually compounded recipes of some steroids in various dosage forms. These include DHEA (dehydroepiandrosterone), pregnenolone, testosterone, progesterone, estrone, estradiol, and estriol. Bioidentical hormones have become increasingly popular because they are better tolerated and are thought to be more effective than the pharmaceutical forms of HRT. Although very little research has compared the two, the use of bioidentical hormones can provide you with a greater flexibility with respect to the dose and type you need. The other advantage is that it gives you the same hormones that your body normally produces. An increasingly popular estrogen preparation is Biest, which combines estriol and estradiol, the two natural forms of estrogen.

If you suffer from disturbing hot flashes and your choice is not to take hormones or hormone treatment has not been effective, you may want to use an SSRI or SNRI (Serotonin-norepinephrine reuptake inhibitor). Research has shown that these antidepressants have a beneficial effect on hot flashes.⁴⁹ Another option is to increase your intake of phytoestrogens. Phytoestrogens are polyphenol compounds of plant origin that have a similar molecular structure to 17 beta-estradiol. Soy isoflavone extracts can help relieve hot flashes, but they are not as effective as estrogens or antidepressants.⁵⁰ I encourage you to take omega-3 fatty acids for your menopausal symptoms, whether you have elected to receive HRT or not.

After the release of the Women's Health Initiative results, numerous dietary supplements have been proposed for women in menopause. Research has shown that extract of black cohosh (*Cimicifuga racemosa* L.) improves menopause-related symptoms; however, it can cause liver damage.⁵¹ Your doctor may recommend dong quai (*Angelica sinensis*), ginseng, garlic, *Rhodiola rosea*, or evening primrose oil. However, there has been little research done on these herbs, and it is possible that some of them will increase your risk of breast cancer. The semipurified isoflavone red clover leaf extract provides little benefit. Another alternative is Femal, which is an herbal compound made from pollen extracts. It may improve your hot flashes and other symptoms of menopause.⁵²

Tibolone is another option to treat hot flashes and vaginal dryness. Tibolone regulates estrogen effects. It also improves your libido and your energy. Tibolone, however, does not affect breast tissue.⁵³ Selective estrogen receptor modulators (SERMs), such as raloxifene, will also help with menopausal issues. The over-the-counter supplement 5-hydroxytryptophan can also help your hot flashes and other menopausal symptoms.⁵⁴

For menopausal women and women about to become menopausal, relaxation techniques, adequate correction of the thyroid imbalance, and lifestyle modification are crucial to prevent or treat the lingering effects of thyroid imbalance (see Chapter 17). Sex hormones, thyroid hormones, and stress influence mind and body. How these effects manifest in terms of mood or physical discomfort varies from woman to woman, and how a physician diagnoses his or her patient's suffering depends on the physician and what appears to be the source of the most prominent symptoms. One physician may blame hormones, another may cite stress, and a third may implicate depression or anxiety. Regardless of the type and severity of symptoms, you often need to address all the components that may be involved in the symptoms. You also need to have the thyroid component detected and corrected as early as possible.

Important Points to Remember

- If you are a new PMS sufferer, an underactive or overactive thyroid may be the cause of your symptoms.
- If you have suffered from PMS but your symptoms have recently worsened and your menstrual periods have changed, have your doctor consider a thyroid imbalance.
- PMS is essentially a brain chemistry disorder, and changes in hormones that regulate your brain chemistry appear to be important contributing factors. Keep in mind that thyroid hormone is a major player in brain chemistry.
- If you have experienced a severe thyroid imbalance in your reproductive years, you are likely to experience unpleasant times at menopause. Adequate thyroid treatment and relaxation techniques may be the solution.
- Menopause is a vulnerable time for women. The frequency of Hashimoto's thyroiditis and hypothyroidism increases sharply during this period.
- The symptoms of menopause and thyroid imbalance are quite similar. If you begin to experience depression, fatigue, and mood swings, do not necessarily attribute your symptoms to menopause. Have your doctor test your thyroid.
- Thyroid imbalance worsens symptoms of menopause and vice versa. Unless all the effects of menopause and thyroid imbalance are addressed, your symptoms may continue and escalate over time.

INFERTILITY AND MISCARRIAGE

Is Your Thyroid a Factor?

Even before the era of sophisticated, precise thyroid testing, doctors were aware of the effects of thyroid imbalance on reproduction. At the turn of the twentieth century, physicians administered thyroid hormone to women to improve their fertility and treat menopause. Today's doctors recognize that adequate thyroid hormone levels are essential to help regulate the production of sex hormones (that is, estrogen and progesterone) and the hormonal cycle responsible for ovulation. Both an excess of thyroid hormone and, more commonly, a deficiency of the hormone alter the harmonious functioning of the reproductive system and sometimes prevent ovulation. Even if ovulation and conception occur, a thyroid imbalance can lead to a deficit in progesterone, which can render the uterus unsuitable for implantation of an embryo. This, in turn, prevents a normal pregnancy.

A number of important advances have occurred in the past two decades in the field of infertility medicine. Less publicized have been the findings that link thyroid hormone imbalance with impaired reproduction, infertility, and miscarriage.

Both an underactive thyroid and an overactive thyroid can cause infertility problems and affect the outcome of a pregnancy. Nevertheless, because hypothyroidism is much more common than hyperthyroidism, thyroid-related infertility and miscarriage problems are more frequently caused by an underactive thyroid. For this reason, this chapter focuses on hypothyroidism as a cause of these difficulties.

Infertility is a common condition. Doctors estimate that one of every six couples of childbearing age has a problem with fertility.¹ With modern infertility protocols, which are frequently expensive and time-consuming, approximately two-thirds of all couples can be treated and successfully conceive.

Infertility can be considered a type of chronic illness. The afflicted person

lives with a constant but shaky hope that “it” will go away or be cured. An inability to conceive can generate a profound feeling of failure, which can lead to a state that psychologist Erik Erikson described as “stagnation and personal impoverishment.”² Many infertile couples become obsessed with their childlessness and feel inferior when they see other people with babies. The countless doctor appointments, the expenses, the effects on employment, and the monthly hopes and expectations may eventually overburden the couple and cause them to feel they have no control over their lives, leading to depression and marital problems.

Quite frequently, women being treated for a thyroid imbalance enter infertility programs with no idea that their thyroid condition could be preventing conception and a normal pregnancy. Even more alarming, a significant number of reproductive endocrinologists and gynecologists who treat infertile couples are unaware that a minimal thyroid imbalance can compound or even cause infertility. Nor do many of these doctors realize the importance of detecting subtle thyroid abnormalities.

Although we don't know how frequently minimal hypothyroidism contributes to infertility, recent research has clearly demonstrated that it is an important contributing factor. One study showed that approximately 25 percent of women referred to one infertility clinic had low-grade hypothyroidism.³

When a couple seeks help for infertility, a female-related issue is identified 45 percent of the time. The most common identifiable female-related issues are ovarian dysfunction, tubal disease, and endometriosis. One study showed that even when the woman has an identifiable cause of infertility, she is more likely to have an autoimmune thyroid condition and thyroid dysfunction as well than a woman not having an infertility issue—antithyroid antibodies were elevated in 18 percent of infertile women, compared to 8 percent for healthy women.⁴ The female issue that is more frequently associated with autoimmune thyroid disease and thyroid imbalance is endometriosis. As you can see, the thyroid can be an additional contributing reason for infertility, even if there are other issues that could explain your infertility problem.

If you're experiencing problems with fertility, discuss with your gynecologist the possibility of a thyroid imbalance before you spend two years engaging in an infertility protocol. Ask to have your thyroid tested. Often an imbalance will show up only if you have a TRH (thyrotropin-releasing hormone) stimulation test.⁵ Among patients found to have low-grade hypothyroidism, the infertility may be reversed with thyroid hormone treatment.

Because thyroid testing is not routinely done when patients enter fertility clinics, many women with minimal hypothyroidism struggle for a long time attempting to conceive. Maria, age thirty-three, had gone through infertility

protocols for almost two years. She was outraged when she learned that she had had symptoms of hypothyroidism for some time but that her gynecologist had not checked her thyroid at the outset of her treatment. She told me, "I had a hard time getting my weight off, and there were some other telltale thyroid signs that I think a doctor who was knowledgeable in this area should have been able to see." Maria became pregnant two months after beginning thyroid hormone treatment.

I have cared for several women with minimal hypothyroidism whose infertility problems were reversed within two to three months after they began thyroid hormone treatment. Prior to the thyroid problem's being identified, all of them had suffered significant emotional and financial burdens as well as altered relationships with their spouses. Many of these women actually wondered whether their marriages could survive. Although infertility usually affects both partners, the person suffering from infertility usually has greater feelings of guilt, inadequacy, failure, and low self-esteem. Infertility issues are more common in women than men. Also, given our culture's tendency to blame women, infertile women often take on even more guilt and suffering than men, and their feelings of inadequacy may be magnified.

The Burden of Stress and Anxiety

Quite frequently, when a woman is infertile, her husband makes her feel it is her responsibility to become pregnant. One patient described her situation as follows:

My husband told me it was my "job" to get pregnant. I remember the therapist telling me, "I think part of the reason you feel so bad every month when you're not pregnant is because your husband has told you that it is your job, so you're failing at your job."

My husband thought of it as my sole goal. My measure of self-worth became whether the pregnancy test came back positive or negative. So every time the test came back negative, I felt like a complete and total failure. This made me even more depressed. Because I had to suffer in silence, it made it harder to deal with all these emotions. I was filled with sadness.

Generally speaking, infertile couples feel so bad, sad, or ashamed of their problem that they do not tell other people about it. Cut off from friendly support, the infertile person or couple often feels isolated and struggles even more with the emotional upheaval brought on by this problem. It is very important for women to reach out for support during this time. RESOLVE, a national support group for women with infertility issues, has chapters that

meet regularly in all major cities around the country. RESOLVE members help each other with medical information and emotional support.

The effects of infertility on a woman suffering from a thyroid dysfunction become exaggerated when she is unaware of the thyroid imbalance. The multiple effects of the thyroid imbalance on the woman's emotions may render the suffering quite unbearable and exacerbate the conflicts between spouses. Typically, if she were not hypothyroid, the woman could hide her sadness from friends or relatives, because it would be related to her infertility. When she is hypothyroid, even minimally, the effects of thyroid imbalance may make her depression worse and leave her unable to cope with the stress of infertility. Take steps to prevent this escalation. If you are becoming increasingly depressed over your infertility problem, get a thyroid-stimulating hormone (TSH) test.

The anxiety that occurs during the months when a woman is taking fertility drugs typically intensifies any anxiety caused by thyroid problems. She worries about whether she will become pregnant this month and how this will change her life. Due to the incredible anxiety she faces, the disappointment of a negative pregnancy test result may be magnified. As a consequence, some women experience worsening PMS and increased anger, mood swings, irritability, and arguing with their husbands.

A hypothyroid woman who is obligated to have intercourse even on days when she may have an aversion to sex often feels even more guilty and inadequate. If her husband is not sympathetic or supportive, or misunderstands her lack of interest in sex, the arguing and distance between them can increase. Roselyn, a thirty-three-year-old secretary, has been married for five years. She tried to conceive for three years and went through infertility protocols with no success. The cause of the infertility was, however, a low-grade hypothyroidism that was uncovered only when they almost gave up the idea of having a baby. Roselyn said:

I could not believe how much stress I felt from trying to get pregnant. Month after month, we spent thousands and thousands of dollars. I had to make the two-hour round-trip to my doctor's office ten to twelve days a month. There was no apparent reason that the fertility protocols I tried were not working for me. It was totally unbelievable. What made it even worse for me was that I didn't feel like I got a lot of support from other people. When I would tell someone we were trying, they would just say, "Oh, all you have to do is relax. My best friend and her husband went on a second honeymoon, and she got pregnant!" I knew that in my case relaxation had nothing to do with whether I got pregnant. Finally, I just stopped talking about it even to my closest friends.

My infertility affected every aspect of my life. My husband is extremely in-

troverted, and he doesn't discuss things with people besides me. So that made it much harder. My PMS has gotten worse, and I often find myself crying and sad. I was experiencing a lot of anxiety and couldn't sleep at night.

When the time of the month came when we had to have sex, I almost dreaded it. I was starting to resent even being touched by my husband. Important aspects of sexuality, like intimacy and spontaneity, are lost when you're going through infertility because the doctors tell you when to have sex, how to do it, who is supposed to do what, where to do it, and for how long. That's not the way it is supposed to be. For me, it just led to a lot more stress.

I couldn't understand what was happening. Nothing made any sense! The fighting and arguing between my husband and me kept escalating over the months. We started going to a therapist, sometimes five or even seven days a week.

I got hysterical. I ranted and raved. The monthly disappointment of not getting pregnant was just unbelievable. I would wait and wait and think, well I'm going to be pregnant. No, yes, maybe . . . and then, sure enough, I wasn't pregnant. It was totally devastating.

— Everything I did had to be planned around when I needed to be at the doctor and when I needed to do this and that. There were many times that I really felt like just giving up. I think my husband got to that point, too.

I kept asking myself, "Is this even worth it?" Without even taking into consideration my time and other inconveniences, I bet we spent over \$50,000. That was money out of our pockets.

Because of the repeated failures, Roselyn became quite depressed. As she described it, "I finally quit my job and stayed home. I didn't cook; I didn't do anything. I just sat around the house all day."

Many women like Roselyn become obsessed with their condition and undertake their own determined search for the cause of their infertility. Roselyn eventually became inspired to go to the library and do her own research. She says:

I looked at every infertility book. One book mentioned the thyroid. In this case, my doctor resisted, telling me it would cost \$150 to run that test. I said to myself, "I'm already spending \$500 every time I come in here, so what's another \$150?" He agreed to run the test, and to his surprise, it showed I was hypothyroid. At the time, I was angry that this test had not been performed \$50,000 and a year earlier.

When I began taking thyroid hormone, there was an improvement in how I was feeling—the cold, the dryness, the hair. I was a little aggravated that it took a couple of months. I thought you could just start me on thyroid hormone on Monday and I could be pregnant on Tuesday. It didn't work that way. Even so, it was the first step in getting me out of what was the worst situation I have ever been in in my entire life.

I also wonder whether anyone would ever have figured out that I had a thyroid problem had I not pursued the fertility research. I even had fertility-related surgeries before I was diagnosed as hypothyroid. Now I think all that was unnecessary.

To avoid the needless suffering that Roselyn went through, ask your reproductive endocrinologist if thyroid testing is part of the infertility work-up. If not, have your doctor request the test.

When Inadequate Hormone Treatment Leads to Infertility

If you have already been diagnosed with an underactive thyroid and are being treated for it, your infertility may be caused by an under- or overcorrected thyroid imbalance. If you are taking thyroid hormone to treat hypothyroidism, make sure that your treatment is adequate before trying to become pregnant. Insufficient dosage can also cause infertility.

One evening I was giving a talk on the health effects of mild hypothyroidism to a patient support group made up of laypeople. As I was pointing to a slide illustrating that minimal thyroid hormone deficiency could be responsible for both infertility and miscarriages, I noticed the face of a young lady sitting in the back. She noticeably brightened up, and her expression changed from frustration to what appeared to be relief and hope. Following the lecture, she asked me a few questions about how a small deficit in thyroid hormone could affect ovulation and then indicated that she had a thyroid condition and would make an appointment to come and see me. She stated that she had been frustrated and that her stress levels had become high as a result of being unable to conceive. One week later, Felicia was in my office. She told me:

I was diagnosed hypothyroid at the age of nineteen. I was then placed on thyroid hormone by my physician. My thyroid has been at the same level for probably the last eight years. I had been going to an internist who once a year had been running TSH tests, and it had been staying pretty stable. He would maybe adjust the dosage once in a while, but it was never anything drastic. I got married four years ago, and we were ready to have children. Initially, we had the attitude that if it happens, it happens. We weren't really on a schedule at any point. It was maybe a year and half after we were married that we started to concentrate on it, and nothing happened. I had been seeing a gynecologist who happened to be an infertility specialist.

I have been going through cycles of drugs to induce a pregnancy, and we have not been successful. I was wondering if my thyroid had anything to do with it.

I asked Felicia whether she had other symptoms. "I did notice that I started to get bad night sweats, and I was suffering from hair loss and very dry and scaly skin. I mean, you could run a brush across it and it would flake off, especially on my legs," she said.

Her marital relationship was affected significantly. Her husband constantly blamed her and made her feel as if something was wrong with her. She explained:

It made me feel less of a woman. I began to envy women who don't have to go through all the battles of medications and timing and ovulation testing.

The worst part was the distance that grew between me and my husband. Sex became a chore after a while because you are concentrating on it so much that it isn't spontaneous and fun anymore. Then you come to the end of the month and you're still not pregnant, and you have to face at least another whole month of this routine that is now old and tiring.

In reviewing the records that Felicia had brought, I noticed that her TSH levels in the past two years, while she had been taking 0.15 milligrams of synthetic L-thyroxine, were 6.0 and 4.5 (normal TSH is 0.4 to 4.5 millinternational units per liter). The fact that her levels were high suggested to me that she was not taking enough thyroid hormone. If that were the case, I thought the resulting mild thyroid hormone deficiency might account for her infertility. I increased her L-thyroxine dose to 0.175 milligrams and asked her to wait a few months before resuming the fertility drugs.

Two months later, Felicia got pregnant immediately, without fertility drugs. "We thought there is no way that it could have worked like that because of all these other obstacles that we had encountered in the past. It is amazing that we tried with medications for two years and we were not successful, and with a small increase in the dosage, I became pregnant right away."

When she returned to my office six weeks pregnant, Felicia was both happy and angry. She said, "What upsets me the most is that my internist knew I was struggling with infertility. I do feel like we wasted a lot of time and money because no one considered that the thyroid was a problem."

Any woman who has an infertility problem should have her thyroid checked. This simple test may help prevent much of the struggle, mental stress, and financial burden associated with infertility. Even a minute thyroid imbalance can result in correctable infertility. By the same token, any woman who is currently being treated for a thyroid imbalance or has previously been treated for such a condition should be thoroughly tested before attempting to conceive.

Beyond Infertility: When Miscarriage Intervenes

As difficult as infertility is, its hardships can pale compared to the trauma of a miscarriage. Many women, especially those who have had repeated miscarriages, experience tremendous stress and may also suffer from low self-esteem, depression, and marital conflicts.

Although recurrent miscarriages can be due to genetic problems or to a wide range of medical conditions, a high rate of recurrent miscarriages has also been demonstrated among women with thyroid imbalances. The relationship between pregnancy and thyroid problems has been known for some time. Three to four decades ago, gynecologists treated women who had multiple miscarriages with thyroid hormone, which was noted to prevent further pregnancy loss in a significant number of women. Research has shown that minimal thyroid imbalance can cause recurrent miscarriages and an inability to carry a normal pregnancy.⁶ Even Hashimoto's thyroiditis not severe enough to make the thyroid gland underactive may be associated with miscarriages.⁷ Studies have concluded that 2 to 3 percent of pregnant women are hypothyroid.⁸ An underactive thyroid can result not only in miscarriages but also in birth defects and other problems that could compromise the health of both the fetus and the pregnant woman.⁹

Emily was happily married and, at the age of thirty-five, had her first child. Two years later, she decided to have a second child and stopped taking birth control pills for five months. Soon afterward, she says:

I started gaining weight like a bear preparing for winter. The only difference was that I was barely eating and I was exercising daily. The weight problem started taking over my life. I was severely tired and depressed all the time, and all I wanted to do was sleep. When I decided to seek help, I went to a weight-loss clinic.

The physician informed me that I had a goiter and suggested that I see my personal physician before beginning the weight-loss program. When my doctor informed me that I was pregnant, I thought the weight gain and the excessive lethargy were due to the pregnancy. The pregnancy made me excited, and I even ignored the thyroid problem.

Emily was already thinking about a name for the baby, but at the end of the first trimester, she had a miscarriage. She did not understand how this could have happened and felt that she had failed her husband and family. Her guilt and depression were disproportionate to those that a miscarriage usually causes, probably because of her hypothyroidism.

While Emily was telling me her story, I was somewhat amazed that her physician had found a goiter but did not test her thyroid function. In retro-

spect, it was clear that she had many symptoms of hypothyroidism. The miscarriage was probably related to hypothyroidism because, two months later, tests were performed and showed that her thyroid was indeed underactive.

Emily's thyroid imbalance was diagnosed early on, and she had only one miscarriage. Months later, her thyroid hormone levels returned to normal with treatment, and she had no difficulty carrying a pregnancy to term. Any woman who has had several miscarriages should be tested for a thyroid problem. Even mild thyroid imbalance never suspected by physicians can cause a pregnancy to fail.

Important Points to Remember

- Thyroid imbalance, and low-grade hypothyroidism in particular, may be the overlooked reason for your infertility problems.
- Before you spend two years pursuing an infertility protocol, discuss with your gynecologist the possibility of a thyroid imbalance, and ask to have your thyroid tested. Often the imbalance will show up only if you have a TRH stimulation test.
- Infertility can make you depressed because you may feel as if you have failed at your "job" of becoming pregnant. Thyroid imbalance may worsen your depression, leaving you unable to cope with the stress of infertility. If you are becoming increasingly depressed over your infertility problem, consider the possibility of a thyroid imbalance.
- If you find yourself trapped in the dilemma of lacking sex drive and feeling obligated to have sex, consider the possibility of a thyroid imbalance as the culprit for both the low sex drive and the infertility.
- If you are taking thyroid hormone to treat hypothyroidism, make sure that your treatment is adequate before you try to become pregnant. Insufficient and excessive dosage can cause infertility.
- Thyroid disease is an often-overlooked cause of recurrent miscarriages as well. Have your thyroid checked if you have repeatedly failed to carry pregnancies to term.

POSTPARTUM DEPRESSION

The Hormonal Link

Bringing a new baby into the world typically brings happiness, joy, and relief. It also brings increased worries, responsibilities, sleepless nights, and, quite often, tremendous stress. In the period immediately after birth, you may experience temporary tension, anxiety, mood swings, anger, difficulty sleeping, and crying spells. For most women, these emotional changes last for only a few days and then resolve. Some new mothers, however, continue to suffer mild to moderate mood disturbances for several weeks.¹ Other women who complete a pregnancy experience longer-lasting, bona fide postpartum depression.

Over the past two decades, thyroid researchers have shown that various forms of autoimmune thyroid disorders are quite common during the postpartum period.² Clearly in a large number of women suffering from postpartum depression, thyroid imbalance is either a trigger of the depression or a contributing factor.

The Hidden Suffering of Postpartum Depression

Postpartum mental disorders have been recognized since antiquity. Descriptions of patterns of mental disorders related to childbirth have been available since a report by the Frenchman Jean-Etienne-Dominique Esquirol in 1838.³ Nonetheless, postpartum mental disturbances were seldom talked about until recently, and women afflicted with postpartum depression hid their suffering out of shame. Serious interest by the medical community in postpartum conditions and recognition of both the high frequency of such suffering and its effects on the woman, child, and family began in 1982, when an English physician organized a conference on postpartum psychiatric illness.⁴ This led to the founding of an international organization to promote ad-

vances in knowledge and treatment of postpartum psychiatric illness. Scientific advances in the field of psychiatry, the formation of support groups, and increased public awareness through media coverage have since revealed much of the hidden suffering associated with postpartum depression.

Postpartum depression is quite common in our society. It has been estimated that one of four women experience the postpartum blues,⁵ and nearly 20 percent suffer depression in the first three months of the postpartum period.⁶ Most women are depressed for a few weeks and then get over it spontaneously, whereas in more severe cases the depression may last up to a year.

In many cases, both the women themselves and their gynecologists attribute the emotional troubles that occur in the postpartum period to just caring for a new baby. Quite often, women struggle through this depressive state without receiving treatment or support from their spouses or families. In fact, most husbands of women going through postpartum depression have trouble coping with the changes in their wives' mood and behavior, which tends to isolate the women further and exacerbate their depression. Therefore, more often than not postpartum depression is undiagnosed, and its symptoms are frequently attributed to the stress that the mother is going through.

If you are suffering from postpartum depression, you are less likely to provide the affection and the care that your infant needs. You are also less likely to continue to breast-feed your infant. Postpartum depression in the mother can make a child more vulnerable to having cognitive impairment and attention deficit hyperactivity disorder. Research has shown that other consequences of maternal postpartum depression for the child may include violent behavior and difficulty controlling anger.⁷ The longer the mother's depression, the more likely the child's behavior will suffer negative effects. Another effect of postpartum depression on the infant is impaired growth and diarrhea.⁸

Unfortunately, postpartum depression continues to be dismissed and not taken seriously. Psychiatric help is sought only in extremely severe cases of depression, when a person becomes suicidal, and many women suffering from postpartum depression remain undiagnosed and are not treated properly.

Fluctuations in the levels of bodily hormones have been held accountable to some extent for the occurrence of postpartum psychiatric conditions. Postpartum symptoms are increasingly thought to be tied to the rapid fall of hormone levels (that is, estrogen and progesterone) from the high levels during pregnancy to the low levels of the postpregnancy state.⁹

If hormone shifts were the only trigger, then all women would suffer from postpartum depression, but this is not the case. First, your genes can make you susceptible to postpartum depression; research has suggested that

in many instances postpartum depression is familial. Women with a history of depression prior to pregnancy and women who suffer from severe PMS are also more likely to suffer from depression in the postpartum period.¹⁰ If you experience depression, anxiety, or just "the blues" during pregnancy, you are at higher risk for suffering from postpartum depression. Equally important, if you experience a great deal of stress during pregnancy or immediately after delivery, if you have marital relationship issues, if you are not receiving adequate familial or social support, if you are subjected to physical, sexual, or emotional abuse or a significant financial hardship, if your pregnancy was not desired to start with, or if you have had pregnancy-related health issues, you are more vulnerable to having postpartum depression.¹¹ Women who frequently go to the doctor during pregnancy and those who take frequent sick leaves are also more susceptible to postpartum depression. If you have depressive symptoms in the third trimester of pregnancy or in the early postpartum period, this could be a clue that you will suffer from postpartum depression. What also can make you more vulnerable to postpartum depression is fatigue from caring for the infant and lack of sleep. In fact, if you are very tired and feel exhausted by the end of the second week postpartum, you have a high risk for suffering from postpartum depression, according to research.¹² In addition, if you experienced mild symptoms of elation early on after delivery, this may be another clue that you will suffer from postpartum depression.¹³ This may indicate as well that you have a mood disorder of the bipolar type.

Depression is not the only type of mental suffering that can occur in the postpartum period. Women in the postpartum period perceive stress in an exaggerated way and often experience anxiety. According to research, one of three women suffers from a generalized anxiety disorder in the postpartum period, and a third of women who deal with anxiety also have depressive symptoms.¹⁴

It is obvious that the high vulnerability to mental suffering that many women have in the postpartum period increases the likelihood of postpartum depression if they have a co-occurring postpartum thyroid imbalance.

How Common Is Postpartum Thyroid Imbalance?

More than a century ago, a committee of the Clinical Society of London noted the role of thyroid imbalance in causing postpartum mental distress.¹⁵ This report pointed out that many patients with an underactive thyroid were severely ill after childbirth. It has since become clear that a thyroid imbalance can cause or exacerbate postpartum depression. In fact, women who suffer postpartum depression have a higher frequency of positive antithyroid antibody, a marker for autoimmune thyroid disease.¹⁶ It has also become obvious

that thyroid imbalance tends to occur quite frequently in the postpartum period.

Research has shown that 5 to 12 percent of all women have postpartum autoimmune thyroiditis.¹⁷ One-half to two-thirds of these women experience hyperthyroidism, hypothyroidism, or both in the postpartum period.¹⁸ One study done in Wisconsin on women evaluated at six and twelve weeks postpartum showed that 11.3 percent of them had thyroid disease and 6.7 percent had either hypothyroidism or hyperthyroidism.¹⁹ White women seem more likely to have postpartum autoimmune thyroiditis than African-American women (8.8 percent versus 2.5 percent). The high frequency of postpartum thyroid dysfunction has to do with the immune system becoming more active and disturbed in the postpartum period. For instance, research has shown that as many as 45 percent of patients who suffer from Graves' disease during the reproductive years are diagnosed in the postpartum period.²⁰ Women who have had children have a higher risk for suffering from Graves' disease down the road than women who have never been pregnant. The rebound autoimmunity that occurs in the postpartum period is explained in part by hormonal shifts. Stress and depression can also make the immune system more autoreactive.

Quite often, however, postpartum thyroid imbalance occurs in women who already have an autoimmune thyroid disease prior to delivery. Research has shown that more than half of women who have thyroid antibodies (an indication of Hashimoto's thyroiditis) during pregnancy experience thyroid dysfunction in the postpartum period.²¹ If you have positive thyroid antibodies during pregnancy, your risk of suffering postpartum depression becomes much higher as well.²² You also are at risk for having postpartum thyroiditis if you consume high amounts of iodine.²³

The Many Faces of Postpartum Thyroid Imbalance

The onset of a thyroid imbalance may occur as early as one to two months after delivery, and the imbalance may exhibit different patterns. The most typical pattern has three distinct phases: a transient or temporary hyperthyroidism lasting two to three months, followed by a period of hypothyroidism, and then spontaneous return of thyroid levels to normal. This pattern occurs in 25–30 percent of women with postpartum thyroiditis. In a significant number of women, the function of the thyroid gland returns to normal by seven to eight months into the postpartum period. In essence, many cases of thyroid imbalances occurring in the postpartum period are temporary. Some women, however, will have a persistent and even permanent imbalance.

The reason for this pattern is related to a rapid autoimmune attack on

thyroid cells, similar to the condition of silent thyroiditis (see Chapter 4), which tends to occur in people with Hashimoto's thyroiditis. During the first phase, the destruction of thyroid cells results in the release of thyroid hormone into the bloodstream, causing hyperthyroidism. As the destruction subsides, thyroid hormone levels decrease. This frequently results in hypothyroidism because the cells that were healthy and previously making adequate amounts of thyroid hormone are no longer present to maintain normal thyroid levels. Once the patient becomes hypothyroid, thyroid cells begin to regenerate. It takes a few weeks before the thyroid completes its recovery and thyroid hormone levels return to normal.

Kathy, age twenty-six, had several symptoms of postpartum thyroid dysfunction. She was diagnosed only after her thyroid function was on its way back to normal. Her symptoms were indicative of hyperthyroidism, which lasted for two months, followed by three months of hypothyroidism. But she and her husband, an anesthesiologist in a teaching hospital, had attributed all of her symptoms to the stress associated with having a baby and moving to a different city. Kathy described her symptoms as follows:

I felt hyperactive after I had my baby. I was running around so much after she was first born to the point that I had uterine bleeding again. I was breastfeeding, but I would run around and try to do all these things.

By the time my daughter was four months old, I'd lost twenty-six pounds. I felt hot, shaky, and sweaty. I remember sitting in the closet and crying and being very upset. I had rapid heartbeats. We thought it was just stress.

Two months later, I felt depressed and all of a sudden tired and exhausted. I regained the lost weight plus another fifteen pounds. My skin was dry. I was so sleepy that when my little girl napped, I would nap, too. I went to see my doctor, and he said my thyroid was big.

What Kathy described was a period of hyperactivity and hypomania caused by hyperthyroidism, followed by a period of depression caused by hypothyroidism.

In general, hyperthyroidism tends to occur earlier than the first two to three months after delivery, whereas hypothyroidism usually occurs at a later point, at around four months after delivery. Hypothyroidism occasionally occurs as late as eight months after delivery of a baby.

In some women, destruction of the thyroid cells and the resulting hyperthyroidism are not severe enough to precipitate a phase of hypothyroidism. In such women, hyperthyroidism is present for several weeks, followed by resumption of normal thyroid function. Many of these women are not diagnosed unless systematically tested.

Another common pattern is just a transient hypothyroidism lasting two

to three months. This may be followed either by the recovery of normal thyroid function or by the development of permanent hypothyroidism, which thereafter requires lifelong thyroid hormone treatment. Women who progress into permanent hypothyroidism may have a more severely destructive Hashimoto's thyroiditis than women who recover from this imbalance. Even women who experience transient low-grade hypothyroidism are at a high risk of becoming permanently hypothyroid years down the road. Graves' disease also frequently occurs in the postpartum period. In some women, dormant Graves' disease may flare up in the immediate postpartum period and cause postpartum Graves' disease. The risk of having Graves' disease in the postpartum period is greater in women older than thirty-five.

If you have experienced postpartum thyroid dysfunction once, you are at a higher risk for experiencing the same thing after future pregnancies as well. Also, many women who develop postpartum thyroid dysfunction will have some type of thyroid abnormality later. For instance, one study showed that 23 percent of women who experienced postpartum thyroid dysfunction were found to be hypothyroid twenty-four to forty-eight months later.²⁴ The striking finding was that half the women who experienced just hypothyroidism, as opposed to hyperthyroidism followed by hypothyroidism, in the postpartum period continued to suffer from an underactive thyroid. The older a woman is when she has the postpartum thyroid dysfunction, the greater the risk of having permanent hypothyroidism later. Also, for reasons that are unclear, women who have had multiple pregnancies and previous miscarriages are at a higher risk for having permanent hypothyroidism.

Effects of Postpartum Thyroid Imbalance on Mind and Mood

In the postpartum period, a thyroid imbalance is likely to induce, aggravate, and even perpetuate mental suffering, simply because the woman is already in a vulnerable state. Dr. Clifford C. Hayslip and his coworkers from Walter Reed Army Medical Center²⁵ have shown that women who suffered from postpartum hypothyroidism were depressed and had impaired concentration and memory as well as other complaints more frequently than did women who did not have postpartum thyroid dysfunction. A hypothyroid woman is likely to become careless and to make more mistakes in the postpartum period. She also tends to complain of fatigue, weight gain, cold intolerance, and nervousness. Hyperthyroidism causes fatigue, pains and aches, impaired memory, and irritability, and can promote depression in the postpartum period. Nearly half the women with postpartum hypothyroidism have nightmares, compared to 5.5 percent of women with normal thyroid function.

The rarest psychiatric condition that can occur in the period following birth is postpartum psychosis, characterized by hallucinations, delirium, and

agitation. After the psychosis passes or is medically resolved, depression may follow. Although most cases of postpartum psychosis are not caused by a thyroid imbalance, such an imbalance has been implicated in rare cases.²⁶

Because the effects of thyroid imbalance on mood and emotions in the postpartum period are little publicized, many new mothers are at risk for suffering significantly at just the time in their lives when they—and their families—would expect to feel the most joy. Typically, the depression due to postpartum thyroid disease is indistinguishable from that of postpartum depression, although in many instances the onset of depression due to postpartum thyroid disease occurs later. And many women who have postpartum depression unrelated to thyroid disease experience a worsening of their depression as a result of postpartum thyroid imbalance. Thyroid dysfunction in the postpartum period can intensify a woman's perception of stress and increase the difficulties of coping with the demands related to having a new infant. She may feel a lot of guilt about her inability to provide the care that her infant requires. Certainly, stress, an unconscious fear of mothering, marital conflicts, and real or perceived lack of support from husband and family exacerbate postpartum depression.

Grace, a twenty-nine-year-old nurse, described her suffering from major depression due to postpartum hypothyroidism after the birth of her daughter. She was feeling alone because her husband was out of town quite often and her mother had just been admitted to the hospital for cancer treatment. She said:

For about four weeks, I would get up in the mornings and somehow function in a normal manner. Six weeks after I had my baby, I had a complete nervous breakdown. I would still be in my nightgown and have no recollection of the day at all. One night I went to the store and bought formula and a bottle, and I wrote down all the instructions on how to make the formula, and I sat down and could not move. I wanted to cease to exist for a period of time. I wanted to raise my child, but with everything that was happening, or that I perceived was happening, I couldn't deal with it at that time. I couldn't seem to articulate it, or nobody was listening to the type of help I needed. I needed to rest. They had me diagnosed with major postpartum depression. A few days later, they told me I had severe hypothyroidism.

Grace was treated with thyroid hormone and an antidepressant, which made the depression go away. The depression never came back, even months after stopping the antidepressant. This underscores again the importance of testing for a thyroid condition whenever a postpartum mother is depressed.

When a postpartum thyroid imbalance occurs in a patient with a history of depression, frequently the imbalance triggers a recurrence of the depres-

sion. One patient of mine had had trouble with recurrent depression for years and took medication intermittently, but her worst episode of depression occurred after she had her second baby. Unfortunately, her psychiatrist considered postpartum hypothyroidism only after she made two suicide attempts.

Curing Postpartum Depression

Correcting the thyroid imbalance is a prerequisite for addressing your depressive symptoms in the postpartum period. With thyroid treatment, your symptoms may improve or resolve completely. If you have an underactive thyroid, I recommend a combination of T4 and T3 (see Chapter 18). But often thyroid hormone treatment may not be enough, and you need to take an antidepressant for the depression to resolve completely. If you do not get adequate treatment for your depression, it could become a severe and persistent depression that will affect you and your child.

Sertraline is the most prescribed antidepressant because it is viewed as safe for the nursing infant. Bupropion SR is also quite effective and safe. By and large, however, no major adverse effects have occurred in infants exposed to other antidepressants through breast-feeding.²⁷ However, to minimize the infant's exposure to the medication, you should take the lowest dose that will help your symptoms, and I recommend that your child be monitored carefully for any effect.

You will also benefit from cognitive behavioral therapy in conjunction with an antidepressant. Using both will help you get more benefits than if you used only an antidepressant. Psychotherapy can help resolve any underlying issues that may affect your relationship with your child. Group interpersonal therapy is also quite beneficial.

Take adequate amounts of vitamins and antioxidants known to be linked to mood, such as zinc (10mg/day), selenium (50–100 mcg/day), vitamin C (1000 mg/day), folic acid (800 mcg/day), and calcium (1000 mg/day). Take at least 1,000 to 2,000 milligrams of omega-3 fatty acids, either from fish or as a supplement. Research has shown that increasing consumption of these fatty acids will help depression.²⁸

It is likely that the drop of insulin levels after delivery contributes to the occurrence of postpartum depression. For this reason, you may be able to improve your symptoms by increasing your intake of carbohydrates.²⁹ This will stimulate the release of insulin from the pancreas.

When postpartum depression and postpartum thyroid dysfunction occur at the same time, one cannot with certainty implicate the thyroid disease as being the only reason for depression. Although research has shown a link between postpartum depression and postpartum thyroid imbalance, no

one can be certain whether the depression would have occurred if the thyroid disease had not been present. Nevertheless, thyroid testing needs to be done in any woman suffering from postpartum depression. Treating the thyroid imbalance may make the depression go away. Most physicians do not take postpartum symptoms seriously because, culturally, it is expected that women will go through some mood changes and emotional instability in the postpartum period. Our society unfairly expects these new mothers to “tough it out” and push their way through the sometimes overwhelming emotional and physical effects of postpartum depression. Doctors, spouses, and families often tell new mothers to ignore their own symptoms and “think of the baby” and the joy they “should” feel. Despite the frequency of postpartum depression and postpartum thyroid dysfunction, physicians often ignore both problems and neglect thyroid testing of depressed women in the postpartum period. This tendency *must* change to prevent serious consequences for both mothers and infants.

Important Points to Remember

- In some women, a thyroid imbalance makes postpartum depression worse. Have your thyroid checked if you become overwhelmed by sadness, crying spells, distancing from your spouse, or an inability to care for your baby.
- Thyroid imbalance in the postpartum period often exhibits a pattern of transient hyperthyroidism followed by hypothyroidism, then recovery of normal thyroid function.
- Some women, however, experience only transient hyperthyroidism or transient hypothyroidism. Others develop a permanently overactive thyroid due to Graves' disease or a permanently underactive thyroid due to Hashimoto's thyroiditis.
- Once you have had thyroid trouble after delivering a baby, your risk of having thyroid problems after subsequent pregnancies is increased. Also, you become at risk for having permanent hypothyroidism down the road.
- The postpartum period is a vulnerable one for women, many of whom experience the onset of their thyroid imbalance after delivering a baby.

DIAGNOSING AND TREATING COMMON THYROID DISORDERS

The Journey to Wellness

GETTING THE PROPER DIAGNOSIS

For years, the public has received conflicting information on how to diagnose a thyroid imbalance properly. Some holistic doctors and alternative practitioners may diagnose you as hypothyroid if you suffer from tiredness and other symptoms of low metabolism. They will use your basal (resting) temperature as an index of low thyroid and will monitor the treatment by having you check your basal temperature three to four times a day. Some doctors will treat your allergies, asthma, hair loss, dry skin, and gastrointestinal upset with thyroid hormone, believing that you have an underactive thyroid even if your blood tests are normal. They may tell you that thyroid hormone is not working well in your body and you need thyroid hormone treatment because you are hypothyroid. Many conventional doctors, in contrast, go strictly by blood tests and believe that you have a thyroid imbalance only if your blood tests are clearly out of the normal range.

Because of these differences of opinion, some people have remained undiagnosed even though they sought medical help, whereas others have been subjected to inappropriate and overzealous treatments that were damaging to their overall emotional and physical health. To avoid these pitfalls, you need to know about the most reliable tests for evaluating your thyroid and how to interpret them in light of your symptoms. That way, you won't fall through the cracks and fail to receive the help that you need from your doctor.

Before it was possible to measure blood levels of thyroid hormones, the common practice was to go by indirect clues, such as:

- Basal temperature (an indirect way of measuring a person's metabolism), which is low in patients who are hypothyroid
- Cholesterol levels, which are high in people with hypothyroidism and low in those with hyperthyroidism

- The level of iodine in the blood, which is low in hypothyroidism and high in hyperthyroidism
- Achilles reflex time (how long it takes the Achilles tendon to relax after contraction), which is slow in hypothyroidism and faster in hyperthyroidism

For more than three decades, doctors have been able to measure the levels of the hormones T4 and T3 in the bloodstream as well as thyroid-stimulating hormone (TSH), the pituitary hormone that tightly controls the functioning of the thyroid gland and the manufacture of thyroid hormone. The pituitary is like a finely tuned sensor that detects even a subtle deficit or excess of thyroid hormone. A deficit of thyroid hormone in the blood will cause TSH to rise, and an excess of thyroid hormone will make it fall.

TSH is now recognized as the most sensitive measurement for alerting doctors to a thyroid imbalance.¹ When the levels of thyroid hormone change slightly, they will often remain within the normal range even though the TSH has already become abnormal. In fact, the majority of those who suffer from low-grade hypothyroidism or low-grade hyperthyroidism have T4 and T3 levels within the normal laboratory range. The normal range for thyroid hormone levels is very wide and is established by averaging the levels obtained from large numbers of people. Because what is a “normal” level of thyroid hormone differs from one person to the next, the normal range used in laboratories needs to be wide enough to include many people. For instance, in many laboratories, the normal levels for T4 range from 5 to 12 micrograms per deciliter of serum, and those for T3 range from 90 to 220 nanograms per deciliter.

Technological advances now allow doctors to measure TSH levels in a very sensitive way, both far below the lower limit and far above the upper limit of the normal range. In general, a normal TSH is between 0.4 and 4.5 milli-international units per liter. The greater the excess of thyroid hormone, the lower the TSH below the normal range; the greater the deficit, the higher the TSH above the normal range. Now doctors can detect any minute excess or deficit of thyroid hormone resulting from an over- or underactive thyroid or from taking too much or too little thyroid hormone medication.

This sounds very straightforward. If your TSH level falls within the normal laboratory range, then your thyroid gland is working properly. If it is high, your doctor will diagnose you with an underactive thyroid; if it is low, your doctor will suspect an overactive thyroid and will measure your thyroid hormone levels, which will be expected to be high. But it is not as straightforward as it sounds. Increasingly, more and more physicians believe that you can be suffering from hypothyroidism even though your blood tests, includ-

ing TSH, are in the normal laboratory range. (See Chapter 15 to learn more about hypothyroidism with normal blood tests.)

Problems with Thyroid Testing

A number of common drugs can affect TSH scores, including the following medications that tend to increase TSH:

- Amiodarone
- Haloperidol
- Metoclopramide
- Lithium
- Morphine
- Aminoglutethimide

The following drugs tend to decrease TSH:

- Cortisone and other glucocorticoids
- Dopamine
- Anabolic steroids
- Heparin
- Somatostatin analogues

If you are suffering from depression or an anxiety disorder, you may have a low TSH reading even though you do not have a thyroid disorder. Research has shown that up to 30 percent of patients suffering from major depression not due to a thyroid condition have a slightly low TSH level.² This is presumably caused by the activation of the thyroid system in response to depression. Often the TSH reading becomes normal when the depression or anxiety disorder is treated.

Beyond TSH

Once the TSH test shows evidence of a thyroid imbalance, the next step is to determine the severity of the imbalance. For an underactive thyroid, TSH is very reliable at providing your doctor with a precise measure of the severity of the deficit. The higher the TSH, the more severe the hypothyroidism. In contrast, for an overactive thyroid, TSH has little value for determining the severity of the excess of thyroid hormone in your system.

Another series of tests can be especially helpful in assessing the severity of a thyroid hormone deficit or excess. These include measurements of T4

and T3 uptake and free T4 and T3 levels. To understand these tests, let's take a look at how thyroid hormone gets around inside the body.

Thyroid hormone in the bloodstream is bound to proteins that carry it to the organs. This bloodstream hormone represents a form of reserve. One of the main carrying proteins is thyroid-binding globulin (TBG), which is produced in the liver and can be affected by illnesses, liver disease, and medications such as estrogens. The carrying proteins have bound to them more than 99 percent of the thyroid hormone found in the bloodstream. Therefore, total T4 and T3 levels can be high or low if the amount of these proteins is high or low. For example, a woman who is pregnant or takes estrogen will have high T4 levels (sometimes far above the upper limit of normal) while her thyroid system is working properly. High and low total T4 and T3 are quite common and do not necessarily reflect an imbalance. The system is set so that the levels of free thyroid hormone in the bloodstream and organs remain normal.

For this reason, your doctor will often order another test, called a T3 uptake (often confused with T3 level). T3 uptake gives an estimate of the amount of TBG. When interpreted in conjunction with total T4 or T3, it will provide a more accurate estimate of the level of true biologically active thyroid hormone in your system. For instance, a pregnant woman or a woman taking estrogens will have, in addition to a high T4 level, a low T3 uptake. This indicates that the high T4 is due to high levels of TBG. Actually, if you multiply T4 by T3 uptake, you get the free thyroxine index (FTI), a better test for assessing thyroid hormone level than T4. The free form of thyroid hormone (called simply free T4 and free T3) can also be measured in the laboratory. Free T4 often provides a more accurate picture of whether there is a deficiency or an excess of thyroid hormone in the body. A free T3 level is requested when the gland is minimally overactive and in some cases of thyroid overactivity during pregnancy.

Doctors use the free T4 and the T4 and T3 uptake tests when they need more information on the severity of a thyroid hormone deficit. They also use T4, T3, free T4, and free T3 levels to determine how much excess thyroid hormone is circulating in the body. The higher these hormone levels, the more severe the excess. Doctors also measure these levels when they suspect a thyroid imbalance due to a disorder of the pituitary gland, even when TSH levels are normal.

Getting the Right Diagnosis

If you have decided to be screened for a thyroid imbalance, or your physician has ordered a thyroid test to determine whether you have a thyroid imbalance, make sure that the test ordered is a TSH. As the accompanying table

shows, the test will immediately tell you whether you have hypothyroidism (if the TSH level is higher than 4.5 milli-international units per liter) or you should be further evaluated by measuring the thyroid hormones T4 and T3 if you are suspected of having an overactive thyroid (TSH is lower than 0.4).

HOW TO DETERMINE THYROID IMBALANCES BASED ON TSH LEVELS

Range of TSH Level (milli-international units/liter)	Diagnosis
>20	Moderate to severe hypothyroidism
4.5–20	Low-grade hypothyroidism
0.4–4.4	Normal
0.1–0.39	Gray zone for too much thyroid hormone or pituitary dysfunction
<0.1	Hyperthyroidism or pituitary problem

No further testing is needed if the TSH is normal and you have no symptoms. If the TSH is high or low, however, your doctor will typically measure thyroid hormone levels. T4 often remains in the normal range until the TSH level exceeds 20 milli-international units per liter. Beyond that level, T4 will tend to fall below normal. But this is not engraved in stone. T4 may still be normal even when TSH has reached 25 or 30.

By the same token, thyroid hormone levels will be normal in low-grade hyperthyroidism. When the gland becomes clearly overactive, both T4 and T3 will exceed the upper limit of the normal range. Many people with an overactive thyroid have a normal T4 level, with their T3 being the only thyroid hormone that has risen above normal as a result of thyroid activity.

It is important to make sure that your doctor has measured your T3 level (not T3 uptake) if you are hyperthyroid. Your doctor might overlook severe hyperthyroidism if he or she orders only a T4 test.

The Thyroid Neck Check

In January 1997, during the third annual Thyroid Awareness Month, the American Association of Clinical Endocrinologists introduced the concept of the

thyroid neck check.³ This association recommends that the public learn how to do this simple self-examination for the early detection of thyroid disease.

As I've mentioned, whether a thyroid imbalance results in hypothyroidism or hyperthyroidism, it is often generated by an autoimmune disorder such as Hashimoto's thyroiditis or Graves' disease. Both of these disorders are typically associated with an enlarged thyroid, or goiter. Lumps in the thyroid that can induce hyperthyroidism and lumps that could contain cancer may also become visible. You need to pay attention to the lower part of the neck, where the thyroid gland is located. This is especially important if you have a family history of thyroid disease or symptoms of thyroid imbalance.

You can detect a bulginess or a goiter by extending your neck in front of a mirror and gently turning your head slightly to the right and then to the left. If you see that the surface of your neck area just above the sternum (which is the middle bone of the chest) is uneven or protruding even slightly, you might have a lump (nodule) or a goiter. A goiter could mean having Hashimoto's thyroiditis or Graves' disease.

Another physical sign that physicians check and you can learn to use as well to watch for an underactive or overactive thyroid is the pulse rate. The heart is exquisitely sensitive to changes in the levels of thyroid hormone. Excess thyroid hormone will make your heart beat faster, and low thyroid levels will cause the heart to slow down. If you know your resting heart rate and have developed symptoms of thyroid imbalance, checking your resting heart rate can alert you that your levels have become abnormal. A rapid heartbeat at rest often suggests that you have an overactive thyroid. Make sure, however, that you do not have a fever or an infection, are not dehydrated, and have not consumed caffeine—all of which can raise your resting pulse rate. Also, your pulse rate should be checked while lying down, preferably in the morning. The pulse rate is not sensitive enough to detect low-grade imbalances, however, and it is less reliable if you are older than sixty, since, with aging, thyroid hormone excess loses its ability to accelerate the heartbeat.

Having a Goiter: What Does It Mean?

In the United States, the most common type of goiter after those resulting from Hashimoto's thyroiditis and Graves' disease is a nontoxic goiter, a diffuse enlargement that rarely causes symptoms. It is due to a wide range of growth factors. As with the toxic goiters, a nontoxic goiter may initially be diffuse but over time can become multinodular (containing several lumps). Studies have shown that multinodular nontoxic goiters can eventually become toxic nodular goiters that lead to an overactive thyroid (see Chapter 4).

There are no drugs that can effectively shrink a nontoxic nodule. If, after

becoming multinodular, the goiter causes symptoms such as hoarseness or difficulty swallowing or breathing, however, physicians often recommend surgical removal. Several studies have shown that destruction of the goiter with high-dose radioactive iodine is safe and effective. This may be an alternative to surgery.

Although rare, it is possible for a goiter to form because the thyroid gland lacks certain enzymes that it needs to manufacture thyroid hormone. In adults, a mild deficit in these enzymes can result in a goiter even though thyroid hormone levels in the blood are normal. The goiter is the result of the pituitary hormone TSH being stimulated by a minimally defective thyroid. If several members of your family have goiters without an imbalance, it might be worthwhile to have your physician look into it. Iodine deficiency is another cause of goiter, because iodine is one of the main ingredients used by the thyroid to manufacture thyroid hormone. In the United States, goiter is rarely due to iodine deficiency. In many parts of the world, however, iodine deficiency is a common cause of goiter (see Chapter 19).

To determine the cause of your goiter, your physician may order one or several of the following tests:

- *TSH*: This test can help to determine whether the thyroid's activity is normal.
- *Antithyroid antibodies*: If TSH is normal or high and your gland is diffusely enlarged (no lumps), this test can aid diagnosis. It is used to determine whether you have Hashimoto's thyroiditis.
- *Radioactive iodine scan and uptake*: Doctors use this test if you are suspected of having Hashimoto's thyroiditis or an enzymatic defect. They also use it to differentiate Graves' disease (high uptake) from silent thyroiditis (low uptake) and if you are suspected of having a multinodular nontoxic or toxic goiter.
- *Thyroid ultrasound*: This test can rule out the presence of a lump or confirm the presence of one or multiple nodules (multinodular goiter).

Let me add a few words about thyroid tenderness. Most physicians interpret tenderness in the thyroid as a symptom of subacute thyroiditis. But Hashimoto's thyroiditis can also cause tenderness and discomfort. Even Graves' disease can cause tenderness and pain, although this is not as common. This happens when a component of Hashimoto's disease is also present in the gland. If you have Graves' disease and are suffering from a painful and tender thyroid, it may mean that Hashimoto's thyroiditis could take over and you could become hypothyroid in the near future. Rarely, Hashimoto's thyroiditis causes severe pain that would require surgical removal of the thyroid gland.

When to Measure Antithyroid Antibodies

Antithyroid antibodies are markers in the bloodstream that are released by the immune system when there is an immune attack on the thyroid gland. Although many people with no thyroid disease could have very low scores of these antibodies in the bloodstream, high scores typically indicate an autoimmune thyroid disease. The antibodies that can be readily measured by commercial laboratories for the diagnosis of Hashimoto's thyroiditis are:

- Antithyroglobulin antibody
- Antimicrosomal antibody
- Antithyroperoxidase (anti-TPO) antibody

Of the three tests, anti-TPO antibody is the most sensitive. These antibody tests, however, are not foolproof. Nearly 10 to 20 percent of people with Hashimoto's thyroiditis do not have high antibodies. (If Hashimoto's thyroiditis is suspected, another diagnostic test may be helpful—thyroid ultrasound. It often shows diffuse inflammation and disturbance of the architecture of the gland resulting from the autoimmune attack. Ultrasound also may help in determining whether a bulge in the thyroid represents an area of intense inflammation due to Hashimoto's thyroiditis or a distinct lump, which could raise some concern about malignancy.) Ultrasound of the thyroid also shows disturbed architecture of the thyroid gland in patients with Graves' disease. Color flow Doppler performed with ultrasound also helps evaluate the blood supply to the gland. It is useful both for making the diagnosis of Graves' disease and for evaluating whether remission is likely while the patient is treated with medication.⁴

Once antithyroid antibodies have been found to be elevated and the diagnosis of Hashimoto's thyroiditis is confirmed, do not expect your physician to monitor the levels of the antibody over time. Although my patients sometimes request such monitoring, it serves no purpose and does not affect decisions about treatment. Many people have the immune reaction in their thyroid and high levels of antithyroid antibodies for twenty years or more without problems of underactive or overactive thyroid. They may maintain normal function throughout their lives or could become thyroid-imbalanced in the future. You should also know that one or several of these antibodies may be high in Graves' disease as well.

The antibody more often released by the immune system in people with Graves' disease is thyroid-stimulating antibody (TSAb), which can be measured in the laboratory. As is the case with the other antibodies, TSAb levels may not be high in some patients with Graves' disease. Although it is some-

times useful to measure this antibody in people suspected of having Graves' disease, monitoring the levels of this antibody serves no purpose. By and large, repeating the measurement will have no effect on the treatment of the condition.

People with autoimmune thyroid disease may have high scores of antibodies that are used by doctors as markers for other autoimmune diseases, such as lupus and rheumatoid arthritis. Some of these antibodies are ANA, anti-smooth muscle antibody, and anti-ss-DNA. Such patients, however, may not have an autoimmune disease.⁵ The high scores of antibodies may merely reflect a disturbed immune system mistakenly producing some of these antibodies. Also, if you are suffering from an autoimmune disorder, you are likely to have high levels of antithyroid antibodies. This may or may not be an indication that you have a thyroid imbalance. For instance, as many as 38 percent of children with type I diabetes have antithyroid antibodies.⁶

Know Your Risk

A family history of thyroid disease may increase your risk of having an autoimmune thyroid disease such as Hashimoto's thyroiditis or Graves' disease. This increased risk is related to a genetic predisposition.⁷ If you or members of your family suffer from an autoimmune condition such as insulin-dependent diabetes, lupus, or rheumatoid arthritis, you also have a much higher lifetime risk for developing an autoimmune thyroid disorder such as Hashimoto's thyroiditis or Graves' disease. One study showed that 8.2 percent of patients with autoimmune conditions such as systemic lupus erythematosus, rheumatoid arthritis, systemic sclerosis, mixed connective tissue disease, Sjögren's syndrome, and polymyositis/dermatomyositis have either Hashimoto's thyroiditis or Graves' disease.⁸ The same research also showed that one of four patients with mixed connective tissue disorder and one of ten patients with Sjögren's syndrome have an autoimmune thyroid condition. The most striking finding was that 51 percent of patients with Hashimoto's thyroiditis and 16 percent of patients with Graves' disease have one or more autoimmune disorders. Because the genes that predetermine whether you will have a thyroid condition often overlap or are linked to genes that predispose you to other unrelated conditions, it is important to know that the risk for having a thyroid imbalance becomes greater if you or a family member has been diagnosed with such conditions. For example, former president John F. Kennedy had Addison's disease. His son, John F. Kennedy Jr., also suffered from Addison's disease as well as Graves' disease.⁹ Some patients have two or more autoimmune disorders and are considered as having polyglandular failure syndrome. A characteristic association is an autoimmune thyroid disease, Addison's disease, and insulin-dependent diabetes.

Another example is the definite increase in the frequency of vitiligo among people suffering from Graves' disease or Hashimoto's thyroiditis. Vitiligo is the presence of blanched areas on the skin due to the loss of normal pigmentation in these areas. The loss of pigment results from an immune system attack on the skin cells, called melanocytes, that maintain normal pigmentation. The loss of pigmentation may be limited to a small area or affects many areas of the skin.

One of the most overlooked autoimmune conditions that could coexist with an autoimmune thyroid disease is Sjögren's syndrome (also called sicca syndrome). Nearly half of patients with Hashimoto's thyroiditis have subtle features of Sjögren's syndrome, which can progress to cause dry mouth, dry eyes, and vaginal dryness. Clear-cut clinical symptoms of Sjögren's are seen in a third of patients with autoimmune thyroid disease. This is due to the fact that autoimmune thyroid disease and Sjögren's syndrome have a close genetic link.¹⁰

Multiple sclerosis is also an autoimmune condition genetically closely linked to autoimmune thyroid disease. Recent research has shown that patients with Graves' disease have a high susceptibility to multiple sclerosis and vice versa. The link between Hashimoto's thyroiditis and multiple sclerosis is not as strong, however.¹¹

Celiac disease, a disorder of the small bowel, can also occur in patients with autoimmune thyroid disease. Celiac disease is an autoimmune disorder causing inflammation and damage to the lining of the small intestine. Approximately 2 million people in the United States have celiac disease, and nearly sixty thousand Americans are diagnosed every year.¹² One study has shown that if you suffer from celiac disease, your risk of having an autoimmune thyroid disease increases sixfold. Research has also found that 73 percent of patients suffering from celiac disease have an autoimmune thyroid disease diagnosable by ultrasound,¹³ and one of five has an underactive thyroid.¹⁴ Also, celiac antibodies, markers for celiac disease, have been detected in 14 percent of patients with Graves' disease.¹⁵ Patients who have both celiac disease and a thyroid condition are at an increased risk of diabetes, ulcerative colitis, and dermatitis herpetiform. Also, children with Down syndrome are at risk for both celiac disease and a thyroid imbalance. The inflammation occurs when gliadin, a protein found in gluten-containing foods, such as wheat, rye, and barley, is ingested by a genetically vulnerable person. This inflammation causes malabsorption of various nutrients. For instance, vitamin D deficiency is found in at least 20 percent of patients with celiac disease, and this can promote bone loss and osteoporosis.¹⁶ Common symptoms of celiac disease are anemia, joint pains and aches, fatigue, infertility, neuropathy, and weight loss. However, you may or may not suffer from gastrointestinal symptoms, such as abdominal pain, bloating, constipation, and diarrhea. Diagnosing celiac disease has become easy. Over half of pa-

tients with celiac disease can be diagnosed with just antibody testing. Antibody testing is most useful in patients who do not have gastrointestinal symptoms related to celiac disease.¹⁷ The main treatment for celiac disease is adherence to a gluten-free diet.

Consult the accompanying table to learn about which conditions have been shown to increase the predisposition to autoimmune thyroid disease. This table will also help alert you to other conditions to which you may be predisposed if you have been diagnosed with an autoimmune thyroid disorder and have been or are being treated for it.

AUTOIMMUNE CONDITIONS TO WATCH FOR

Condition	Cause	Symptoms
Pernicious anemia	Deficiency of vitamin B ₁₂ due to lack of a stomach factor essential for vitamin B ₁₂ absorption	Numbness, tingling in hands and feet, loss of balance, leg weakness
Rheumatoid arthritis	Autoimmune inflammation of joints	Stiffness in the morning, joint pain (knuckles, wrists, elbows, and so on)
Insulin-dependent diabetes	Autoimmune attack on cells in the pancreas that produce insulin	Increased frequency of urination, thirst, weight loss, blurred vision, ketoacidosis
Addison's disease	Autoimmune reaction to the adrenal glands (which normally produce cortisol and mineralocorticoid hormones)	Weight loss, fatigue, epigastric pain, nausea, diarrhea, vomiting, low blood pressure, fainting, dehydration, hypoglycemia, increased pigmentation of the skin
Crohn's disease	Autoimmune inflammation of small bowel	Abdominal pain, diarrhea, bloody diarrhea, fever
Lupus	Autoimmune attack on skin and other connective tissue in various organs including the kidney, heart, and joints	Joint pain, fever, rash over the face or other skin areas, kidney damage, heart and lung problems
Myasthenia gravis	Autoimmune attack on a receptor in muscle cells that is essential for contraction of muscles (acetylcholine receptors)	Muscle weakness, double vision, difficulty swallowing

Condition	Cause	Symptoms
Sjögren's syndrome	Autoimmune reaction to salivary glands, tear glands, and mucus glands of vagina	Eye irritation, dry mouth, vaginal dryness
Scleroderma	Immune reaction causing inflammation and scarring of skin and connective tissue of many organs	Stiffness and pain of fingers, Raynaud's syndrome (blanching and pain of fingers upon exposure to cold)
Primary biliary cirrhosis	Autoimmune reaction to bile ducts causing obstruction of the ducts	Jaundice, abnormal liver function, itching
Oophoritis	Autoimmune reaction to ovaries resulting in scarring	Early menopause, loss of menstrual periods

Your risk of becoming hypothyroid is very high if you have received external radiation for the treatment of head and neck tumors, lymphomas, or acne. One study of eighty-one patients who were treated with external radiation for Hodgkin's disease found that up to 58 percent of them were hypothyroid when tested ten to eighteen years after the radiation treatment.¹⁸ External radiation can also cause nodules and cancer in the thyroid gland. The same risk of underactive thyroid and thyroid nodules applies to people who have been exposed to radiation from nuclear fallout.

Radiation from nuclear fallout and nuclear reactor accidents may cause Hashimoto's thyroiditis, thyroid nodules, and cancer as well as hypothyroidism. Researchers noted that as a consequence of the 1986 Chernobyl accident near Kiev in the USSR (now Ukraine), which caused the release of radioactive material, including radioactive iodine, hypothyroidism rates increased in nearby areas. Even horses and cattle that were not evacuated from an area near Chernobyl became hypothyroid. People in parts of the western United States who were exposed to fallout from nuclear tests done in the 1950s and 1960s may be at a higher risk for having hypothyroidism as well as thyroid nodules.

In addition to autoimmune diseases and radiation, certain other conditions, discussed in the following paragraphs, might provide a clue that you or family members may be at higher risk for having a thyroid imbalance.

For reasons that are unclear, the reading disability dyslexia may alert you to an increased risk for developing a thyroid imbalance. Dyslexia is characterized by a difficulty in distinguishing written symbols, and dyslexics often

transpose letters and confuse right and left. Although their overall intelligence may be high, dyslexic children may perform poorly in school because of difficulties with reading and spelling. Typically, dyslexia affects males in the family. Former president George H. W. Bush indicated to me that his son Neil suffered from dyslexia when he was in his very early school years. His trouble had resolved since. Neil, however, has not had thyroid disease himself. On the other hand, President Bush's son Marvin had colitis, also genetically linked to autoimmune thyroid disorders. Marvin also has not had a thyroid problem.

Premature graying of the hair before the age of thirty may indicate that you have genes that predispose you to a thyroid disorder. Barbara Bush had premature graying of the hair, a clue that she was at risk for autoimmune thyroid disease. One small survey among patients with autoimmune thyroid disease suggested that left-handed or ambidextrous men might be at higher risk for having Graves' disease or Hashimoto's thyroiditis.

Dermatitis herpetiformis, a rare condition, may be associated with an autoimmune thyroid disease. People with this condition have fluid-filled blisters with itching and hives over their back and lower extremities. If you or a family member has been diagnosed with this condition, have your thyroid tested.

As we have seen, a thyroid imbalance can affect any organ in the body (see Chapters 3 and 4). Nevertheless, there are many symptoms that doctors often fail to associate with thyroid disease. If you are experiencing any of these symptoms, discuss the possibility of thyroid disease with your doctor and have him or her test your thyroid. For instance, the red, itchy patches of hives, also known as urticaria, can occur with either hypo- or hyperthyroidism. In many patients, hives are a manifestation of an autoimmune thyroid disease. Patients with hives have a higher frequency of Hashimoto's thyroiditis.¹⁹ In some instances, thyroid hormone treatment resolves the condition, even when thyroid hormone levels are normal. If your levels are high or low and you have hives, you may get relief from taking antihistaminic medications and from correcting the imbalance.

Easy bruising can be a sign of a thyroid imbalance. It may have something to do with a low count of blood platelets (cells that are essential in regulating clotting) or a malfunction of the platelets. Sometimes several members of the same family have a low platelet count simultaneously with Graves' disease and could experience tiny punctate bleeding spots in the skin (petechiae).²⁰ An often-overlooked cause of easy bruising in thyroid patients is also the use of nonsteroidal anti-inflammatory drugs (NSAIDs), which doctors frequently prescribe for the aches and pains of arthritis that these patients may experience.

Hair loss has been one of the most common complaints among my thyroid patients. Hair loss occurs during both hypo- and hyperthyroidism and may persist for months even after normal blood levels of thyroid hormone

have been reestablished. This symptom can be very distressing and alarming for both men and women who may also be suffering from weight problems, depression, and low self-esteem. The effect of a thyroid imbalance on the health of hair follicles can be so drastic that you may notice clumps of hair on your pillow or hairbrush. Your hair may be coming out on the brush and blocking the drain after a shower. Although you need to report this symptom to your physician, do not be alarmed. Most of the time, your hair will come back. If you continue to have hair loss for months after your blood tests become normal, it's because the hair follicles have not fully recovered from the effects of the thyroid imbalance. Although it may take six months to a year for the new, strong hair to replace the old, weak hair that resulted from an imbalance, your hair follicles will become healthy with good thyroid balance, healthy nutrition, and stress management.

If you or a family member ever suffered from the patchy hair loss of alopecia areata, you may be at higher risk for having a thyroid disorder. This condition results in bald areas in any part of the body where hair normally grows, including the scalp, beard, and pubic area. Although this condition often causes concern and worry, in most instances it will resolve spontaneously over several months. In a few people, the hair loss is unfortunately permanent.

Muscle weakness is a symptom of both hyper- and hypothyroidism, but if you experience periods of paralysis after hard exercise or eating lots of sugar, it may be an indication that you are suffering from hypokalemic periodic paralysis. The paralysis is caused by low potassium levels and co-occurs with Graves' disease. It tends to afflict Asian people. Often, after you achieve a proper thyroid balance, the decline of potassium levels in your blood will no longer occur, and you will stop having the episodes of paralysis.

The following list summarizes the various conditions that should alert you to the possibility of a thyroid imbalance.

CONDITIONS THAT INCREASE THE RISK OF THYROID IMBALANCE

- Autoimmune disorder (see earlier table, page 241, listing autoimmune conditions that occur with a higher frequency in patients with autoimmune thyroid diseases)
- Dyslexia
- Premature graying of hair
- History of depression
- Manic-depression
- Dermatitis herpetiformis
- Down syndrome, Turner syndrome
- Family history of Alzheimer's disease
- History of breast cancer
- Alopecia areata

- Chronic urticaria (hives)
- Polymyalgia rheumatica
- Celiac disease

As I've mentioned throughout, older people, postmenopausal women, and women who are suffering from depression or have a history of depression, anxiety, PMS, infertility, recent miscarriage, postpartum depression, or heavy menstrual bleeding should consider thyroid imbalance as a possible reason for the thyroid-related symptoms.

Determining your thyroid status will, of course, alert you to whether your suffering has been caused by a thyroid imbalance. Knowing your risk can also make you pay more serious attention to this tiny gland that so intimately affects all aspects of your well-being, from mood to relationships. When you know your risk of thyroid imbalance and have become familiar with its symptoms, you will more likely have your physician consider thyroid imbalance early on, before the imbalance has robbed you of your overall health.

Diagnosing a thyroid imbalance early will also prevent many of the hidden effects that do not cause symptoms right away but could eventually come to haunt you many years later. The accompanying table lists some of the hidden physical long-term effects of hypo- and hyperthyroidism.

HIDDEN LONG-TERM EFFECTS OF THYROID IMBALANCE

Hypothyroidism

High total and LDL cholesterol
Coronary artery disease

Damage to brain structures
High blood pressure
Glucose intolerance and diabetes
Acceleration of aging

Hyperthyroidism

Cardiac rhythm problems
Cardiomyopathy and congestive heart failure
Damage to brain structures
High blood pressure
Glucose intolerance and diabetes
Acceleration of aging
Bone loss and osteoporosis

When the Pituitary Is the Problem

Pituitary deficiency accounts for a very small percentage of the cases of underactive thyroid: as few as 5 in 100,000 people with an underactive thyroid have a pituitary or hypothalamic problem.²¹ Many conditions can cause the pituitary gland to become deficient. The most common are tumors in the pituitary or hypothalamus and destruction of the pituitary as a result of poor blood

supply or an inflammation. Destruction of the pituitary related to poor blood supply, such as can occur after delivery of a baby, can cause the person to have severe headaches and visual problems. An underactive thyroid due to an isolated deficiency of TSH is extremely rare.²²

In hypothyroidism due to a hypothalamic or pituitary disease, the TSH level may be normal or low. The diagnosis cannot be confirmed unless the thyroid hormone level (particularly T4) is measured. In hypothyroidism due to a pituitary problem, the T4 level will be low. You need to know that you could fall through the cracks if you have a pituitary problem causing hypothyroidism but your physician has requested only a TSH test.

Important Points to Remember

- If you are suspected of having a thyroid imbalance, the first and most important thyroid test is TSH.
- If you discover you have a goiter (an enlarged thyroid gland), make sure that you receive appropriate testing. If your thyroid levels are normal or if you have hypothyroidism, an antithyroid antibody test will help determine whether you have Hashimoto's thyroiditis.
- If you have not been diagnosed with a thyroid disorder, learn about the conditions that may predispose you to developing a thyroid imbalance. These include several autoimmune conditions, premature graying of hair before age thirty, dyslexia, left-handedness in men, and familial patterns of thyroid disease.

UNCOVERING COVERT HYPOTHYROIDISM

For people who suffer from the annoying and disturbing effects of thyroid imbalance, getting the right diagnosis is, as you can imagine, a great relief. At last they know, with proper treatment, they will feel better again.

Nowadays the diagnosis of thyroid imbalance is made based on blood tests. If your test results fall within a certain range, you are told that you are normal. If the results are out of this range, you are given the diagnosis of thyroid imbalance.

In chapter 14, I explained that the most sensitive standard blood test for a thyroid imbalance involves the measurement of blood levels of TSH (thyroid stimulating hormone), the pituitary hormone that makes the thyroid gland produce the right amount of thyroid hormone for your body and mind to function optimally. When your thyroid gland underperforms for any reason, including an immune attack on your thyroid, the deficit in thyroid hormone—whether it is minute or significant—will be detected by your pituitary gland. Your pituitary gland, in turn, will produce a greater amount of TSH for the purpose of making the thyroid gland adjust and correct the underperformance.

According to the current standard criteria for diagnosing an underactive thyroid, you have this condition if your TSH reading is higher than 4.5 milli-international units per liter. If the reading falls somewhere between 0.4 and 4.5 milli-international units per liter, you are considered as having a normal functioning thyroid. The reality, however, is that you may be one of the many millions of people who are labeled as having normal thyroids based on their TSH levels even though they may be experiencing a wide range of effects as a result of missing a small amount of thyroid hormone in their systems.

In fact, many people may be suffering from a small thyroid hormone deficit that has not yet resulted—and may never result—in abnormal blood tests. If we included people with hypothyroidism whose blood tests are normal, the incidence of hypothyroidism would no doubt exceed 10 percent of the population. What is of special concern, though, is that many people whose test results are dismissed as normal could continue to have symptoms of an underactive thyroid. Their moods, emotions, and overall well-being are affected by this imbalance, yet they are not receiving the care they need to get to the root of their problems.

The best term I could come up with to label this common source of needless suffering is *covert* hypothyroidism.

Needless Suffering

Nothing is more irritating for people dealing with tiredness, low mood, irritability, and an inability to control their weight than to be told that their TSH is normal, only to learn some years later upon being retested that they are hypothyroid. During the intervening period, they have continued to suffer needlessly, and the thyroid gland—which already is slightly deficient—has been further damaged, leading to an even greater thyroid deficit. In the meantime, they remained undiagnosed, with all the direct and indirect consequences of thyroid imbalance.

Lisa, a 34-year-old lawyer, was referred to me by her gynecologist because on a routine blood test, she was diagnosed as hypothyroid. Lisa said, “I started getting easily tired and depressed seven years ago. I became moody, my PMS symptoms grew worse, and I have gained 22 pounds over the past few years.” Because her sister had suffered from a thyroid problem since she was a teenager, Lisa had been asking her doctors to check her thyroid ever since she’d noticed the fatigue and weight gain.

When I saw Lisa for the first time, I was not surprised to learn that all her TSH levels from the previous seven years were normal. But they were consistently at the high end of the “normal” range, which told me that Lisa probably had an underactive thyroid for some time. Her blood tests were repeatedly assessed as normal because they fell within the normal laboratory range that conventional medicine has established for health care professionals to evaluate thyroid function.

Clearly, Lisa had been suffering for years, yet she could not get the help she needed because of the rigid criteria currently in place for what normal thyroid blood tests should be. Lisa’s story illustrates that underperformance of the thyroid gland can remain minimal for a long time, only to show up through abnormal blood tests after years of producing sometimes debilitating symptoms.

Redefining the Normal Range

How could this be? Lisa wondered. “My TSH was 3 two years ago, and now it has gone up to 12,” she noted. “Was I hypothyroid then?” Yes, indeed, that might have been the case, I answered. The principal reason for the difficulty in detecting an underactive thyroid when doctors use this most sophisticated and sensitive blood test is that, as with T4 and T3, a normal laboratory reading for TSH has been established by conventional medicine based on levels measured in a large number of people, all of whom are presumed to have normal thyroid function. The reality is that many of the people tested to come up with a normal range for all of us are not truly normal. Also, the average TSH level in truly normal people is different from one person to the next. What is normal for your TSH level may differ dramatically from what is normal for mine.

Normal ranges for the diagnostic blood tests of many medical conditions have changed over the years and will certainly continue to change in the future. Let’s take the example of diagnosing high cholesterol. Ten to fifteen years ago, you were considered as having high cholesterol only if your total cholesterol level was above 250 milligrams per deciliter. High LDL cholesterol (the bad kind) was defined as more than 160 milligrams per deciliter. The guidelines have changed over the years, however. These days, if your total cholesterol is above 200 milligrams per deciliter and your LDL cholesterol exceeds 100 milligrams per deciliter, you will be diagnosed with high cholesterol.

Similarly, years ago you were considered to be diabetic only if your fasting blood sugar was higher than 140 milligrams per deciliter. Nowadays, according to new diagnostic criteria, diabetes is defined as fasting blood sugar higher than 125 milligrams per deciliter. As you can see, as the medical community makes progress in its knowledge of the consequences of various illnesses and ailments, the ranges of what is normal narrows, and people who once were considered to be normal now are being diagnosed with those conditions.

In chapter 14, I explained that to be diagnosed with hypothyroidism, a person’s TSH level should exceed 4.5 milli-international units per liter. This means that if your blood tests show a TSH level of 2, 3, or 4, you will be told by your physician that you have normal test results and you do not have an underactive thyroid. Yet you may be suffering from a mild inflammation of the thyroid gland that has produced a very mild deficit of thyroid hormone, not severe enough to cause major and overt changes in TSH levels or in thyroid hormone levels. This inflammation may remain stable for years, which—as you can imagine—will lead to mild underactivity that can go on for a long time before it becomes detectable by blood testing.

Why is it that if your TSH reading is in the upper end of the normal range, you still have a high chance of suffering from hypothyroidism? Let's suppose that your TSH level is 0.6 milli-international unit per liter when your thyroid is working well, but it has gone up to 3 or 4—perhaps because of a minimal thyroid hormone deficit due to Hashimoto's thyroiditis. Your body and your pituitary gland had sensed the deficit, and the pituitary had reacted to it, raising the TSH to almost six times its original level. It is also possible that your random TSH reading is in the upper end of the normal range today, but if you were to be retested in a few days, it might come back abnormally high, showing clear-cut hypothyroidism.

Monica, a 23-year-old graduate student, is an example of how blood test results that fall in the grey zone of normalcy should be a hint that you may have an underactive thyroid. Monica suffered from fatigue, weight gain, and heavy menstrual periods for three years before she finally saw an internist who tested her thyroid. Her TSH level came back at 3.2. Monica was told that her symptoms were caused by too much stress in school and by her careless lifestyle. One week later, her mom—a patient of mine—insisted that she come to see me for a second opinion. A repeat test showed her TSH level to be 6, out of the normal range and conclusive of hypothyroidism.

It is not uncommon for TSH levels to fluctuate, going from high-normal to slightly above the normal range. It is as if the pituitary were trying to adjust normal function from one day to the next. These fluctuations often confuse doctors and make them suspect laboratory errors. "How could a person be hypothyroid one day and normal the next?" is a lament I've heard a number of times from other doctors. In fact, when the thyroid hormone deficit is minimal, the TSH level rises slightly and could be vacillating up and down across the line marking the upper limit of the normal range, leading to confusion and misdiagnosis.

You don't need to be a thyroid expert to realize from what I have said so far that if your TSH is close to the upper limit of the normal range set by laboratories, you have a higher risk of being hypothyroid. In fact, researchers are beginning to recognize the upper normal range as suspicious for hypothyroidism. Nearly a third of patients who are receiving thyroid hormone replacement for hypothyroidism or who have a goiter and whose TSH levels are in the upper normal range turn out to be hypothyroid when they are evaluated by pituitary-thyroid challenge testing, a procedure that allows the detection of minor deficits in thyroid hormone. According to one study, more than 50 percent of women with a positive antithyroid antibody marker for Hashimoto's thyroiditis and a TSH level between 2 and 4.5 became clearly hypothyroid (that is, they show definite elevation of TSH) within ten years.¹ Even when this marker was absent, 30 percent of women with TSH level in the high-normal range became hypothyroid down the road.

After publication of the first edition of *The Thyroid Solution*, medical associations such as the American Association of Clinical Endocrinologists began debating whether or not the upper limit of the normal range should be adjusted. Some thyroid experts have recommended lowering the upper limit of the TSH reference range from 4.5 to 2.5 milli-international units per liter.² This makes sense because the majority of truly normal people have TSH readings of less than 2.5.³ In 2002, the American Association of Clinical Endocrinologists proposed that patients with TSH levels above 3.0 should be considered for treatment.⁴

Despite this trend in thinking, there is still great resistance among experts in the field of thyroid disease who feel that lowering the upper limit of the normal range to 2.5 or 3.0 could create health hazards and economic hardship in our society. They feel that many people with TSH levels between 3.0 and 4.5 do not have an underactive thyroid, and this is true. However, many people whose TSH is between 3.0 and 4.5 do have an underactive thyroid and do have symptoms. In fact, one in five people with a TSH level between 3.0 and 5.0 has positive antithyroid antibody markers for an autoimmune attack on the thyroid.

It is obvious that lowering the upper limit of the normal range to 2.5 or 3.0 will imply that any patient found to have a TSH above these levels will be treated with thyroid hormone. Based on an analysis performed by a group of thyroid experts, if the upper limit of the normal range were lowered to 3.0, an estimated 6.4 to 7.9 percent of the U.S. population older than age 12 (which represents 12.8 million to 16 million people) viewed as having a normal thyroid by current standards would be diagnosed as having hypothyroidism.⁵ And if the upper limit were lowered to 2.5, 22 million to 28 million people currently considered as having a normal thyroid would be diagnosed as having hypothyroidism.

This analysis is quite correct: Lowering the upper cutoff of the normal range to 2.5 or 3.0 milli-international units per liter will promote thyroid hormone prescriptions that may not be necessary for everyone. We are simply dealing with test results that are in the gray zone that separate normal from abnormal. While I do not advocate automatic thyroid treatment for anyone who has a TSH level greater than 2.5 or 3.0, I also do not advocate dismissal of those who have TSH levels in the gray zone and who have symptoms or evidence of a thyroid condition likely to result in hypothyroidism.

Your Test Is Perfectly Fine, But You Are Not

The challenges faced by patients in getting properly diagnosed with hypothyroidism are not only inherent to what should really be considered as a normal range. They also are inherent to the fundamental question of

whether the random blood tests that your physician uses to diagnose thyroid imbalance are a foolproof tool. Indeed, you may have a perfectly normal blood test as well as a TSH level in the lower end of the normal range and still turn out to have an underactive thyroid. This is obviously of great relevance if you suffer from symptoms that could be easily relieved with appropriate treatment.

TSH testing, which is viewed by doctors as the most sensitive and precise way to determine whether you have an underactive thyroid, actually isn't all that precise. Research has shown that TSH testing in the same person with a normal random TSH level provides different readings from one day to the next and from one hour to the next.⁶ Your TSH reading may be 0.8 milli-international units per liter now—which would be interpreted by your doctor as perfect and definitely not suggestive of a low thyroid—but may come back at 2.2 upon retesting. Similarly, your reading could be 1.7 today and 5.1 tomorrow, a level that is clearly indicative of hypothyroidism. These fluctuations reflect how the pituitary gland works. No one has a perfectly stable TSH, whether they are hypothyroid or not.

Now you understand how and why you could be dismissed by your doctor as normal and not having a thyroid condition even though you do.

If you have symptoms of an underactive thyroid but your tests keep coming back "normal," the TRH (thyroid-releasing hormone) stimulation test will help your doctor uncover hypothyroidism. TRH testing brings out any minimal excess or deficiency of thyroid hormone that has not thrown the TSH out of its normal laboratory range. In a person with healthy thyroid and pituitary glands, the injection of TRH (the hormone produced by the hypothalamus that stimulates the pituitary) into the bloodstream will result in a rise in TSH within 30 to 45 minutes after the injection. The difference between the highest TSH level and the baseline level defines what is normal and what is abnormal. In covert hypothyroidism, the difference between the highest level and baseline is higher than normal. The reason for this exaggerated response of the pituitary gland is that when the thyroid is minimally failing, the pituitary goes on alert. It contains greater amounts of TSH, which it releases upon administration of TRH. When there is too much thyroid hormone, on the other hand, the pituitary backs off and contains little TSH. Therefore, the increase in TSH after an injection of TRH is tiny.

Ginger, a pleasant 26-year-old housewife, had struggled with many of the effects of hypothyroidism, and even knew of relatives who had been diagnosed with thyroid disorders. But she was determined to find a clear-cut answer to what was wrong with her, since she knew something was. She came to see me after being tested by two other endocrinologists who had dismissed her as normal, simply because her TSH levels were 0.9 and 1.3.

"You finally reach a point where you are simply tired of feeling tired or

tired of feeling bad.” Ginger confessed at her initial visit with me. “There are really no specific symptoms for you to pinpoint so that you can say, ‘Oh it must be this, or it must be that.’ You just don’t feel well. A lot of people go to a lot of doctors, and they’re told ‘You’re just stressed,’ ‘You’re just overwhelmed,’ ‘Get more rest,’ ‘Exercise.’ As much as you want to exercise more or be more active, your body just will not allow you. You cannot. You can have all of the motivation in the world, but your body cannot physically function. At this age, you should be in your prime! You should be able to run a marathon, or at the very least get up in the morning, energetic and able to function a full day like a normal person with the ability to perform daily tasks.

Everyone wants to give you a general response—‘Exercise, drink water, be healthy, and you’ll be fine’—and you try to explain to them ‘But if I’m fine, how come I don’t feel fine?’ They just don’t get it. Every morning you wake up thinking, When was the last time I felt normal? When was the last time I felt good? When was the last time I woke up and thought, I feel great and this is going to be a great day? I couldn’t even remember.”

A pituitary thyroid challenge test showed that Ginger had covert hypothyroidism.

Weeks into her treatment, she slowly regained the life and well-being she longed to have again. “I feel great,” she says now. “My thyroid hormone treatment was a true lifesaver—a miracle that words cannot define.”

Recognizing Your Symptoms

You would be amazed by how a very tiny deficit in thyroid hormone that has not been detected by standard blood tests can affect you both physically and mentally. It’s a false assumption that the greater the thyroid hormone deficit you have, the more symptoms you will experience as a result. People’s bodies and brains respond so differently to the same degree of imbalance that it’s not uncommon for a person with severe hypothyroidism, as shown in clearly abnormal blood tests, to experience no symptoms, while another person with a very minimal, barely detectable low thyroid notices significant consequences in the way he or she feels.

Although that may seem very odd, the regulation of body chemistry is affected by individual susceptibility to symptoms. Even within the same body, some parts or organs can be affected quite differently. This explains why the symptoms experienced by one person are not necessarily the same as the symptoms experienced by another person with the same deficit in thyroid hormone. This also explains why many people with covert hypothyroidism have no symptoms, while others endure significant suffering.

The most common symptoms of covert hypothyroidism are:

- Fatigue
- Constipation
- Dry skin
- Anxiety
- Low mood
- Hair loss and hair thinning
- Mood swings

Of course, if you have covert hypothyroidism, you could be experiencing any of the wide range of symptoms that could be caused by more significant hypothyroidism. What has amazed me the most over all these years of treating patients with covert hypothyroidism is that the most pronounced symptoms are the mental ones, particularly low-grade depression, anxiety, and mood instability. This reflects how brain chemistry can be so affected by tiny deficits in thyroid hormone.

Physical and mental symptoms are not the only possible consequences of covert hypothyroidism. If you are a woman, you need to know that there are several other ways in which covert hypothyroidism may be impacting your life and your well-being. Unless you get properly diagnosed and treated, some of these effects will have annoying and damaging outcomes. Among the potential adverse consequences of covert hypothyroidism:

- Heavy menstrual periods that can cause iron deficiency
- Recurrent miscarriages
- Issues with infertility
- Exacerbation of PMS (premenstrual syndrome)
- Weight gain and metabolic setbacks
- Worse perimenopausal and menopausal symptoms
- Decreased libido

Very little research has been conducted to determine whether covert hypothyroidism can affect cardiovascular health, though there is some indication that this might be the case. One study has shown that LDL cholesterol, which is elevated in hypothyroidism, can be lowered with fairly small doses of thyroid hormone in persons whose TSH levels are between 2.0 and 4.5 milli-international units per liter.⁷ Another study of patients who had seemingly perfect TSH levels but whose TRH testing was indicative of hypothyroidism showed that LDL cholesterol was lower when they were treated with thyroid hormone.⁸ Perhaps years down the road, we will learn that a small deficit in thyroid hormone that has not thrown your

blood tests outside of the normal range may be detrimental to your cardiovascular health.

MOODY AND DEPRESSED

One of the most common effects of covert hypothyroidism is low-grade depression and vulnerability to sadness. Research has shown that people whose TSH levels are in the upper normal range are more prone to experience episodes of depression and a greater number of episodes of major depression. They are also more likely to develop melancholia, to have attempted suicide, and to be taking at least two antidepressants for their depression compared to people who have normal but lower TSH levels.⁹

Antidepressant medications also appear to be less effective in treating depression when the patient has a TSH level in the upper normal range. This indicates that a minute deficit of thyroid hormone, even though it has not caused your standard blood test to become abnormal or out of the normal range, is actually significant enough to affect your brain neurotransmitters and to make you vulnerable to depression.

The root of the depression may be something other than the thyroid imbalance, but for sure the thyroid is a trigger, a perpetuating factor, or a contributing factor. Even when your standard blood test is seemingly in an excellent range, you may still be suffering from minute deficits of thyroid hormone that can affect your mood and emotions. One study showed that women with covert hypothyroidism, as diagnosed by TRH testing, have had more episodes of depression in the preceding few years than women with normal thyroids.¹⁰

Further, you may not respond to antidepressant treatment simply because of a minute thyroid hormone deficit even though your TSH level is in a good range but the TRH test is showing low thyroid. An example of this is Fern, a 29-year-old bank teller. Fern started suffering from lack of motivation, increased appetite, fatigue, anger, and irritability a few months after she delivered her first baby at age 22. Even though she had everything to be happy about, she was slipping into depression and ended up being treated with Zoloft. A few months later, when her depressive symptoms did not completely resolve, her doctor added a second antidepressant, Wellbutrin.

When she learned that her older sister had just been diagnosed with severe hypothyroidism, Fern came to see me to make sure that her thyroid had nothing to do with her depression. By then she also was suffering from constipation, dry skin, and weight gain. Though Fern's standard blood tests were within a normal range, precise thyroid stimulation testing and an ultrasound of her thyroid revealed that she was suffering from Hashimoto's thyroiditis and covert hypothyroidism. Treating her thyroid condition allowed

Fern to gradually wean herself off one of the two antidepressants. She has been feeling great since.

TIRED AND PANICKY

Angela, a 30-year-old office manager, came to see me after being dismissed as having normal thyroid function with a big pile of blood tests, including multiple thyroid tests, that were run over the previous three years. She said to me, "I have been constantly feeling a lump in my throat, and I have been extremely anxious, and this is affecting my daily life in a way that it is becoming unbearable. I need help. I have trouble going to sleep; I wake up in the middle of the night and will be wide awake, anxious. I feel like I need to do something, like watch TV, clean—not really knowing what I need to do, just feeling like I need to do something. Then by the time I get back to sleep in the morning, I am very tired, which makes the anxiety even worse. I am moody and anxious during the day.

"Trying to get my kid ready to go to bed and complete my daily tasks is really becoming a problem. I simply don't know when the panic attacks are going to happen, so I go out less. I don't feel like going out in public because I don't want to subject myself to the possibility of a panic attack in public. Not knowing when I will have the next one makes me anxious to go places. All of this, and my low sex drive, is affecting my relationship with my husband."

With more precise testing, Angela was found to have covert hypothyroidism. After a few months of thyroid hormone treatment, she said, "I am significantly less anxious than before, and I have not had any panic attacks since I started treatment. Occasionally I will have the sensation of a lump on my throat when I am under stress, but it is much less significant than before. Now I am more energetic and I can function on a daily basis much better than I did before."

FRUSTRATIONS WITH MEMORY

Covert hypothyroidism in some patients can affect not only their mood but also their cognitive function. A minute thyroid hormone imbalance in the brain may result in a person who is susceptible to cognitive problems, impaired memory, concentration and focusing issues, and worsening attention deficit.

If you have a minimally failing thyroid while you are going through menopause, you may experience worse cognitive problems than at other times. But I have seen patients with covert hypothyroidism struggle with impaired memory even in their thirties and early forties. The case of Jill illustrates how covert hypothyroidism can affect the neurotransmitters involved in memory and concentration.

Jill, a 44-year-old teacher, came to me after being evaluated by neurologists for memory impairment. She feared that she was developing Alzheimer's disease. Because both her mother and her sister had thyroid conditions, she was tested for thyroid imbalance multiple times over the preceding five years. All of the blood tests—including the tests that the neurologists had just ran—turned out to be normal.

As Jill explained, "Four years ago, I noticed that my memory ability was going down the tubes, and I started to get really concerned. I have always been the kind of person who never had to write anything down or keep lists because everything was always in my head. When I heard a report on National Public Radio about premenopause causing this symptom, I thought for a while that it was just part of life and that my mind just wasn't working as well. But my memory was getting worse, and I constantly felt like my head was in a cloud. Then I became fatigued and depressed. I am still suffering from fatigue and lack of motivation, even though I have an exciting life. My memory is getting so bad that I know deep inside that my thyroid is contributing to it, even though my thyroid was tested several times and the readings, they said, were normal." I determined that Jill was suffering from Hashimoto's thyroiditis, the inflammation that causes the thyroid gland to slow down. Her standard thyroid blood tests were indeed normal, but with the more precise pituitary-thyroid challenge testing, Jill turned out to have covert hypothyroidism. I treated her with an appropriate amount of thyroid hormone. A few months later, she reported, "My mood is much better, I don't have the fatigue that I had before, and my memory has improved, though I am still suffering from minimal impairment. Maybe there is a point where you do have to accept that age is contributing somewhat. It is a relief to feel like I am a little bit more in the game."

It is probably true that the memory impairment that Jill started to experience at age 40 has to do with peri-menopause and aging. But what was obvious in her situation is that her memory difficulties also had to do with a very tiny thyroid hormone deficit—a deficit that was not severe enough to throw a blood test out of the normal range but was severe enough to affect Jill's cognition.

FEELING OLD

"I feel old," explained Renae, a patient of mine who had come to me for a second opinion regarding her symptoms. "There are probably four or five symptoms that bother me regularly, ranging from intolerance to cold to dizzy spells and lightheadedness. But the worst problem that I am struggling with is feeling physically aged.

"I am 25 years old, and I'm dealing with consistent gradual weight gain—the result of my metabolism slowing down so much from being hypothyroid.

I continuously feel exhausted; I'm so tired that I cannot get through the day without feeling like I need a nap, even if I slept a good 8 or 10 hours the night before. I struggle to stay awake. Once I fell asleep sitting at my desk in my office. I have no energy to do anything.

"When you feel so physically worn out, it can rob you of your motivation to do anything. Even something as effortless as trying to hold a thought in your head is exhausting. I don't care about sex; with the way I feel physically, it's definitely not a priority. There's really no way to explain it. I feel like I'm trapped in an elderly person's mind and body."

Renae turned out to have covert hypothyroidism. Her standard blood tests were consistently "normal." Within weeks, treatment with thyroid hormone had reversed most of her symptoms.

The Cause May Be the Hint

In chapter 1, I explained how an immune attack on the thyroid, causing chronic inflammation of the gland, is the most common reason that a person develops hypothyroidism. The chronic inflammation of Hashimoto's thyroiditis is very prevalent, affecting women more frequently than men. Hashimoto's thyroiditis is by far the most common cause of hypothyroidism whether it is covert, low grade, or moderate to severe. While low-grade hypothyroidism is five to six times more common than moderate to severe hypothyroidism, covert hypothyroidism is probably even more common than low-grade hypothyroidism.

In essence, when you consider the entire spectrum of severity of thyroid hormone deficit caused by Hashimoto's thyroiditis in the general population, only a small fraction of Hashimoto's thyroiditis patients have a severe attack ultimately leading to severe hypothyroidism. Simply put, the less severe the hormone deficit, the more common the affliction. If you're experiencing symptoms of low thyroid and you have discomfort or tenderness in the neck area, this may be a clue that you have Hashimoto's thyroiditis. Suffering from another autoimmune condition, or having family members with an autoimmune condition, is another likely indication of Hashimoto's thyroiditis.

As I mentioned in chapter 14, the measurement of anti-thyroid antibodies may be quite useful in diagnosing Hashimoto's thyroiditis. But as you can imagine, having covert hypothyroidism implies that the inflammation is quite minimal and somewhat contained. This explains why so many people suffering from covert hypothyroidism due to Hashimoto's thyroiditis have negative and even undetectable anti-thyroid antibodies. In other words, even the reason for the deficit may remain undiagnosed because the blood tests that we rely on to make the diagnosis may turn out negative. This is another reason

that you may be dismissed as normal. I have found that thyroid examination to look for an enlarged thyroid (or a goiter), along with an ultrasound of the thyroid showing disturbance of the architecture of the gland itself, is much more indicative of Hashimoto's thyroiditis than the finding of a positive anti-thyroid antibody blood test.

A large number of people are afflicted by Hashimoto's thyroiditis but have no thyroid hormone deficit and no symptoms. Further, they may or may not experience a thyroid imbalance down the road. If you are diagnosed with Hashimoto's thyroiditis during a routine examination (having an enlarged thyroid and/or positive thyroid antibodies) but your blood tests are normal, your doctor likely will not prescribe thyroid hormone treatment simply based on your test results. You should not be denied treatment if you have symptoms of low thyroid. Unfortunately, even after your doctor has detected Hashimoto's thyroiditis, the condition that can cause low thyroid, you may be begging for help and listing the typical symptoms of low thyroid but your doctor likely will tell you, "You have the inflammation, but you don't have low thyroid, and you don't need treatment. Let's just repeat your tests next year."

This is what happened to Gina, a 41-year-old psychotherapist, who recently came to see me after having heard that all of the symptoms she had been experiencing for years sounded like symptoms of low thyroid. Gina, ironically, had been diagnosed with Hashimoto's thyroiditis six years earlier during a routine annual exam by her gynecologist. At that time, she'd been having tenderness and discomfort in her neck. Her gynecologist determined that Gina's thyroid gland was slightly swollen all over and that her thyroid antibody level was high, which together indicated to him that Gina had Hashimoto's thyroiditis. Still, her TSH level was perfectly normal.

Months later, Gina started having some odd symptoms. When she went back to her gynecologist, he did not feel that her symptoms were thyroid related. The reason was obvious: Gina's TSH level was perfect at 1.2 milli-international units per liter.

For six entire years, Gina knew, and her doctors knew, that she had Hashimoto's thyroiditis. Though her multiple TSH readings remained more or less the same over all of those years, she suffered from fatigue, difficulty focusing, and lack of motivation that affected her life at so many levels. Gina's example illustrates that being diagnosed with Hashimoto's thyroiditis should be a hint to you and your doctor that you may develop low thyroid down the road, even though your blood tests remain normal. Once I treated Gina with appropriate amounts of thyroid hormone, she regained her energy and her passion for her work, her focus improved, and she no longer crashed on the couch when she arrived home in the evening.

If you have symptoms of low thyroid but your thyroid tests are normal

and you've previously had silent thyroiditis or sub-acute thyroiditis, it is likely that you have a residual, minute thyroid hormone deficit resulting from damage to the thyroid gland by these conditions. As explained in chapter 4, silent thyroiditis is a short-term immune attack on the thyroid that typically causes temporary damage to the gland. This results in too much thyroid hormone in your system for a few weeks, followed by an underactive thyroid for a few weeks, followed by healing of the gland and the return of normal hormone levels. Sub-acute thyroiditis is a viral illness that leads to excessive thyroid hormone associated with the destruction of thyroid cells, followed by hypothyroidism and then recovery to normal thyroid function after a period of healing.

Both silent thyroiditis and sub-acute thyroiditis can leave behind a small deficit of thyroid hormone that is not severe enough to throw blood tests out of the normal range. Still, if you've been diagnosed with either condition and you continue to have symptoms of low thyroid, but your doctor tells you that your thyroid tests are normal, I urge you to seek help from a specialist who can evaluate your thyroid more thoroughly to see if you have covert hypothyroidism.

In women, it is not uncommon for the symptoms of low thyroid to coincidentally start in the post-partum period and continue for a long time. If this happened to you, it may be a clue that you experienced post-partum thyroiditis resulting in a small deficit of thyroid hormone, which can cause symptoms even though your blood tests are now normal.

You also can develop covert hypothyroidism months or years after treatment for Graves' disease with medications, surgery, or radioactive treatment. Your doctor may now be telling you that your tests are normal and you are in remission or that the treatment destroyed the exact right amount of thyroid tissue that needed to be removed or destroyed. Still, you may be experiencing the effects of covert hypothyroidism.

If you had a lobe of your thyroid removed because of a thyroid nodule, your blood tests may remain normal for a long time after the surgery. In fact, your blood tests may never become abnormal. Yet the remaining lobe is not performing in exactly the same way that the entire gland was performing prior to the surgery. The thyroid hormone deficit is minimal and your blood tests are normal, even though you may be suffering from the effects of low thyroid. Thyroid damage from radiation could also lead to covert hypothyroidism.

If you are being treated for an underactive thyroid with thyroid hormone, your doctor determines whether you are taking the right amount of medication by monitoring your TSH level. Your TSH may be in the normal laboratory range while you're taking a specific dose of thyroid hormone, and as a result, you will be told that your thyroid is in perfect balance. Actually,

though, you may be suffering from symptoms of low thyroid because there is still a small hormone deficit that is not detected by blood tests. A high percentage of patients treated with thyroid hormone whose TSH levels are in the upper segment of the normal range need an increase in the dose of thyroid hormone to feel better.

As you can see from what I just explained, if you are experiencing symptoms of low thyroid and your family history or your own history indicate that you are at a risk for a thyroid disorder, you may be suffering from covert hypothyroidism. Or you could be suffering from covert hypothyroidism and its ill effects not because you have a thyroid disorder but because your thyroid cells are unable to manufacture the right amount of thyroid hormone as a result of too little or too much iodine in your system. Iodine deficiency is not uncommon in the United States and is likely to be a hidden cause of covert hypothyroidism. A minute thyroid hormone deficit also can result from excessive consumption of raw foods containing goitrogens, such as turnips, cabbage, and mustard greens, as well as from poor intake of selenium and zinc, which can impair the manufacture of thyroid hormone and lead to covert hypothyroidism.

Inefficiency of Thyroid Hormone

You may be suffering from symptoms of low thyroid, even though your thyroid gland is producing adequate amounts of thyroid hormones and your thyroid tests are perfectly normal, simply because the hormones are not working efficiently in your body. Once the thyroid hormone T4 reaches cells, it is converted to T3, the most active form of thyroid hormone. Then it's able to interact with genes and help regulate metabolism, among a myriad of biological effects.

It turns out that locally, in bodily organs, the amount of the active form of thyroid hormone is finely regulated as well. From an evolutionary perspective, this is the most ancient form of regulation, having developed much earlier than the pituitary gland. In primitive vertebrates such as lampreys, the main mechanism for regulating thyroid balance is found within organs, and the central mechanism of hypothalamic/pituitary control is nonexistent.¹¹ As animals evolved to rely more on the thyroid gland to manufacture thyroid hormone, the hypothalamic/pituitary mechanism became the major system of regulation. Local regulation in organs (including how much T3 is produced from conversion of T4 in organs) gradually became a secondary mechanism that controls the availability of the right amount of active thyroid hormone and its effects in organs.

It is conceivable that in some people, there is an abnormality in the regulatory process inside organs that is designed to deliver the right amount of

thyroid hormone to the metabolic machinery of the cells. People with this type of regulatory dysfunction may suffer from many symptoms of low metabolism and low thyroid.

One of my patients, Judith, first came to see me because of tiredness, dry skin, and difficulty losing weight despite dieting and exercise. Because her thyroid tests were normal, I explained to her that her symptoms had nothing to do with her thyroid. She replied, "It does no good for me if my pituitary gland is well and is producing normal amounts of TSH and I am not happy." She vehemently told me that if I did not put her on thyroid hormone, she would go to another doctor who would. "All of the symptoms that I have are those of a low thyroid," she kept saying.

Because I suspected that she would have the misfortune of being placed on a high dose of thyroid hormone by another doctor, I prescribed a low dose of thyroid hormone and insisted that this will be only a three-month trial. To my surprise, most of her symptoms went away, and she has continued to do fine. Two weeks later, a 42-year-old woman and her two daughters came to see me with similar complaints. Their blood tests were also normal, and their symptoms also improved with thyroid hormone. Perhaps some genetic factor was causing an inefficiency of thyroid hormone in their bodies.

A few years ago, medical researchers advocated in the *British Medical Journal* a trial of thyroid hormone treatment for about three months in people suffering from symptoms of hypothyroidism.¹² They believed that many people may be hypothyroid despite having normal blood tests. Quite possibly, this proposal has merit. However, further research is necessary to make sure that the treatment works for reasons that go beyond the placebo effect. (A placebo effect might have been responsible for the positive outcomes of thyroid hormone treatment in the patients I just described.)

For thyroid hormone to work efficiently in your system, the cells in your body and brain must contain adequate amounts of essential micronutrients such as vitamins and antioxidants. As detailed in chapter 19, micronutrients such as zinc, selenium, and vitamin A are necessary for appropriate conversion of T4 to T3 and for thyroid hormone to do its job. It is conceivable that you will experience symptoms of low thyroid not because the gland is not producing an adequate amount of thyroid hormone but because the hormone cannot properly regulate the functioning of your cells as a result of low levels of these essential micronutrients. Vitamins and antioxidants are crucial for optimal thyroid health.

Inefficiency of thyroid hormone can also occur as a result of toxins and damage to small blood vessels, as in the case of fibromyalgia. Fibromyalgia not caused by a dysfunctional thyroid gland is in fact thought to be caused by an inefficiency of thyroid hormone in certain parts of the body. Doctors

use T3, the active form of thyroid hormone, as part of the treatment for fibromyalgia to help overcome this inefficiency.¹³ T3 treatment works even better for fibromyalgia symptoms if the patient also takes adequate amounts of antioxidants that enhance the efficiency of thyroid hormone in organs.

The emerging evidence that someone can be hypothyroid despite normal blood tests explains the common frustration among people who do not get help despite displaying recognizable symptoms such as tiredness, low mood, and difficulty concentrating. It is one of the reasons that many patients turn to naturopathic doctors or other alternative practitioners after trying to get relief from conventional physicians. Some naturopathic doctors indiscriminately prescribe thyroid hormone for symptoms of underactive thyroid in people having normal blood tests, and sometimes in doses that will exceed their patients' needs. For these reasons, it's important that you get the right diagnosis and, if you are prescribed thyroid hormone, that you pay close attention to the doses that you're given. Also, insist that your thyroid hormone and TSH levels be monitored regularly during treatment.

The Road to Wellness

As you will learn in the next chapter, to correct your underactive thyroid, you need to take thyroid hormone in a specific amount, which should be commensurate with the deficit of thyroid hormone in your system. While a synthetic form of L-thyroxine alone can help you with your symptoms, it may not be enough. I have found that Armour Thyroid, a natural form of thyroid medication that is derived from pig thyroid and contains small amounts of the hormones T4 and T3, provides more significant benefits than synthetic T4 alone when used in small doses to treat covert hypothyroidism. This makes sense since the most annoying ill effects of covert hypothyroidism are lingering mental symptoms, including low-grade depression, fatigue, and anxiety.

The benefits of thyroid hormone treatment that includes T4 and T3 such as Armour Thyroid or another combination mix in the right amount can be quite tremendous in covert hypothyroidism. In small amounts, Armour Thyroid does not cause the major swings in T3 levels that we often see with the higher doses used to treat moderate to severe hypothyroidism (see chapter 16). As an alternative to small doses of Armour Thyroid, I often prescribe a combination of small doses of synthetic T4 (L-thyroxine) in conjunction with small amounts of T3 Slow Release in a compounded form.

Regardless of the thyroid medication, you need to have your thyroid hormone levels monitored periodically to make sure that your treatment requirements do not change down the road. To achieve optimal wellness, you also

need to take adequate amounts of vitamins, antioxidants, and omega-3 fatty acids. These will help support your immune system and your thyroid gland as well as provide all of the necessary ingredients for thyroid hormone to work efficiently in your body. I often recommend a comprehensive, well-balanced mix of these micronutrients such as the ones found in ThyroLife products. These gluten- and iodine-free supplements have been designed for thyroid patients, their relatives, or anyone looking for a well-balanced mix of vitamins and antioxidants that help support the thyroid make thyroid hormone work more efficiently and help with enhancing energy and metabolism. (For details, visit thyrolife.com.)

Important Points to Remember

- If you have thyroid symptoms, you may be suffering from a minimal thyroid deficiency, even though your TSH reading is normal.
- A TSH reading in the upper normal range should be looked at with a high level of suspicion, as it may be an indication that you will become more severely hypothyroid down the road.
- Having Hashimoto's thyroiditis, a personal history of thyroid disorder, or a family history of thyroid disease can be clues that you have hypothyroidism, even if your blood tests are normal.
- Amazingly, covert hypothyroidism can have a wide range of physical and mental effects, including low-grade depression, fatigue, anxiety, and cognitive impairment.
- To uncover covert hypothyroidism, you may need a pituitary thyroid challenge test in addition to standard blood tests.

TREATING THE IMBALANCE

Being diagnosed with a thyroid imbalance can be a relief for people who have long suffered from its symptoms, because they expect that all their problems will disappear very quickly with treatment. They cannot wait to get on with their lives, feel good again, and function normally. Their doctors will often assure them that their thyroid tests will become completely normal over the next few weeks and they will start feeling good again. Typically, when patients begin the treatment, they will perceive a gradual improvement. For weeks or months, however, they may continue not to feel at their best. Many find it hard to admit to other people, either at work or at home, that they are still not feeling good.

In fact, some symptoms may resolve only after a period of thyroid stability. Often, after correction of a thyroid condition, emotional effects may persist as a result of what I call the “shake-up” of the brain by the thyroid imbalance. In order to shorten this period of recovery and avoid the persistence of symptoms, you need to work with your doctor to reach and maintain normal thyroid hormone levels as soon as possible. You also need to avoid wide fluctuations in your thyroid levels, which are likely to occur if your doctor has little expertise in treating thyroid disorders.

This chapter teaches you how to reach and maintain a proper balance. It also addresses many of the problems that commonly occur during the treatment of thyroid conditions. It highlights cases of undue suffering resulting from stereotypical treatment approaches and limited awareness of the effects of thyroid imbalance during treatment. It also shows you how to avoid these pitfalls and speed up your recovery.

Finding the Right Doctor

In the initial phase of treatment, many patients struggle with their emotions. On the one hand, you want to express your suffering to your physician. On the other hand, you may be quite inhibited about disclosing your anguish. Many patients become overwhelmed by their symptoms and need compassion and understanding from their physicians. If you are receiving treatment for an underactive thyroid by your primary care physician, make sure that your doctor has a good knowledge of adjusting medication. If difficulties arise, insist on being referred to a specialist.

The emotional effects of thyroid imbalance may make you feel alone and helpless. The physician's attitude will have a significant effect on the way you will feel. You have the right to expect your doctor to explain the nature and effects of thyroid imbalance. Some doctors are not prepared to deal with the emotional and mental effects of thyroid imbalance during treatment, however, and will instead focus almost exclusively on normalizing your blood tests. This can be very frustrating to patients whose emotional and mental changes haven't been explained adequately. Some patients, who haven't been told about the effects of thyroid imbalance, may find themselves wondering whether they are not sick but "crazy." You should expect more from your doctor than just analyzing blood tests and adjusting thyroid medication. Your endocrinologist should explain the dynamics of the disease and lay out what is likely to happen as a result of it.

While treating Cassandra's overactive thyroid with medication, the endocrinologist's primary concern was to adjust the dose of medication and try to achieve normal blood tests. Meanwhile, Cassandra was experiencing unexplained emotional problems. She described her encounters with her physician:

We would have a very brief discussion and do an exam. Sometimes she would chastise me for not working. I felt she couldn't understand how truly ill I was. I was reporting all the anxiety and depression, and she was very dismissive of that. I went every two weeks for a period of months.

I didn't think enough aggressive measures were being taken to subdue my symptoms. I was so angry with the endocrinologist. I was thinking maybe I wasn't being a good patient. But I was a very compliant patient. I wanted to feel better. It was like I was in a big black hole trying to climb out, and nobody could reach in to get me. I felt helpless. It was very depressing. I felt trapped. My self-esteem was terrible.

One day, the nurse announced I was in the exam room, and I heard the doctor say, "Again?" She often didn't communicate with me outside of the office. Her office staff would call, or I would get messages in the mail to adjust my dosage.

I expected her to have a greater understanding of what I was going through symptomatically and emotionally.

Cassandra had great willpower. She wanted to feel normal; she wanted to understand. She wanted to communicate with her physician. She attempted to describe her emotional, debilitating suffering, but her doctor seemed unconcerned. Unlike Cassandra, many people may not feel at ease talking about their suffering. Many have severe anxiety or panic attacks and do not express the symptoms to their physicians for fear of being taken for fools. Yet it is important to express these symptoms, both to ensure better understanding and to obtain optimal treatment. To avoid undue suffering generated by lack of communication between you and your doctor, choose a thyroid specialist who can deal with your emotions.

Nuclear medicine doctors are often involved in the treatment of Graves' disease because they are the ones who calculate the dose of radioactive iodine and administer the treatment to the thyroid gland. Unfortunately, many nuclear medicine doctors feel that they are capable of taking over the care of Graves' disease patients. They seldom have adequate knowledge, however, to assess the response to therapy. They also have very limited knowledge of the clinical and emotional aspects of hyperthyroidism during treatment. Some patients with an overactive thyroid, either on their own or based on recommendations from friends, seek their care from nuclear medicine doctors. This may result in inadequate control of the thyroid imbalance, thus lengthening the period of suffering and adding more frustrations and adverse emotional effects.

Treating the Underactive Thyroid

As I've explained, hypothyroidism due to a damaged thyroid gland causes high TSH levels. The higher the TSH, the more severe the hypothyroidism. Your doctor's treatment goal is to give you the amount of thyroid hormone needed to reduce TSH to normal levels. In general, the higher the TSH, the higher the thyroid hormone dose needs to be for you to reach and maintain normal thyroid balance.¹ Therefore, the TSH level obtained at diagnosis may allow your doctor to predict from the outset the dosage range needed to achieve close-to-normal thyroid levels. Thus, it is not uncommon for doctors to increase the dose gradually over the first few weeks of treatment without monitoring TSH until the estimated dose has been reached and stabilized for a few weeks.²

Although synthetic levothyroxine, currently the most widely used form of thyroid hormone to treat hypothyroidism, became available in the 1950s.

its use became widespread only in the early 1970s, when researchers discovered that animal-derived thyroid extracts were causing unstable and inconsistent blood levels of thyroid hormones. Desiccated thyroid contains T4 and T3 in variable amounts, depending on the preparation process used by the manufacturer and the iodine content in the diet of the animals from which the thyroid glands were taken. Also around the same time, scientists discovered that when people take synthetic thyroxine (T4), some of it is converted to T3 in bodily organs, thus providing stable levels of both T4 and T3. The stability of thyroid hormone levels and TSH levels achieved by using synthetic levothyroxine is also due to the fact that T4 has a very long life in the body. When taken on a daily basis, the thyroxine pill allows for a steady and continuous production of T3 in bodily organs.

Pharmaceutical companies manufacture levothyroxine tablets in different strengths, ranging from 25 micrograms (or .025 milligrams) up to 300 micrograms (0.3 milligrams). The availability of these different strengths facilitates the fine adjustment of the dose of thyroid hormone so that blood levels can be maintained in the normal laboratory range as long as you continue taking the medication. The three most commonly used synthetic preparations of levothyroxine are Synthroid, Levoxyl, and Unithroid. When you fill your prescription, make sure you are not given a generic preparation, since generics may not contain the exact amount of thyroid hormone prescribed.³

In June 2004, the Food and Drug Administration determined that many generic levothyroxine medications are equivalent to and as safe as brand preparations.⁴ The methods and the criteria that the FDA used to reach this conclusion might have been appropriate for many medications, but certainly not for thyroid hormone replacement treatment. Despite a difference in potency of more than 10 percent between the various levothyroxine preparations, the FDA is still considering them as equivalent.⁵ Yet such difference obviously can lead to significant difference in your blood tests. The FDA's decision means that now pharmacists can give you any levothyroxine preparation, including a generic, instead of the brand prescribed by your doctor. As you can imagine, the ruling made by the FDA has, to say the least, displeased endocrinologists throughout the country. Medical associations such as the American Association of Clinical Endocrinologists and the American Thyroid Association are seriously concerned about the potential health-related adverse effects of substituting generic levothyroxine preparations for brand products. The reason for this concern is that the dose that your doctor has prescribed for your underactive thyroid may be quite different from the dose that your pharmacist has dispensed. Some of the generic preparations that you may be given are levothyroxine sodium, Levo-T, Novothyrox, and Thyro-Tabs. I urge you to be proactive and demand that

your pharmacist give you the exact brand of medication that your doctor has prescribed. In fact, to avoid any instability in your blood levels generated by substitution, try to keep taking the same preparation throughout your treatment. Also, if for financial or insurance reasons you have to take a generic product, make sure that your pharmacist gives you the same generic for refills; this will minimize significant changes in your thyroid levels during treatment. It is to be hoped that these issues will be resolved once the FDA takes steps to change the methods and criteria for evaluating the equivalence of thyroid medications.

If your doctor doesn't do the dose adjustments properly, you are likely to continue to experience symptoms for a long time. For Tracy, whom I recently saw for a second opinion, it took a year and a half to reach normal thyroid levels after her initial diagnosis. She said, "My doctor was having so much trouble getting me regulated to a normal TSH level. Every four months, I'd be going back in and complaining I wasn't feeling well, and sure enough, the blood test would show that I was correct. The adjustments made by my doctor were never enough to make me normal again."

To avoid such problems, I have developed a graduated dosage method that yields excellent results for most people. In the accompanying table, you can identify the dose that you need to reach during this first phase of treatment by looking at your initial TSH level.

GRADUATED DOSAGE METHOD FOR LEVOTHYROXINE

Initial TSH Level (milli-international units per liter)	Dose to Be Achieved at End of First Phase (micrograms of levothyroxine)
< 15	25.0
15–25	37.5
25–30	50.0
30–40	75.0
> 40	100.0

In people with severe hypothyroidism, the initial dose of thyroid hormone should be small and increased gradually to the dose required. Abrupt and rapid administration of high doses of thyroid hormone to severely hypothyroid patients may cause health problems, especially in older people. For example, while a person is hypothyroid, his or her heart works slowly and has adapted to the low metabolism. Rapid correction of hypothyroidism in someone with a preexisting heart condition, which may be unknown to the patient and physician, could quickly accelerate the heart function and induce a heart

attack. It is clearly better and safer to start at a dose of 25 micrograms a day and increase the dose weekly by 25 micrograms until the estimated dose is reached. For patients under forty-five years of age who are otherwise healthy, the dosage may be stepped up faster. In older patients and those with heart disease or anxiety symptoms, the dosage should be stepped up every two weeks.

Severe mood disorders that can be quite alarming may also occur when doctors prescribe high doses of thyroid hormone at the beginning of treatment. Often such patients have a history of high anxiety or emotional problems. These symptoms may occur four to seven days after they begin taking the high dose of thyroid hormone. If you experience mental effects, you need to have your doctor reduce the dose of thyroid hormone immediately. Doctors have had to hospitalize patients because of mania or other reactions to excessive thyroid hormone. Patients may become severely agitated, their thoughts may race, and they may exhibit inappropriate behavior. Some may even experience hallucinations and delusions.⁶

A high amount of thyroid hormone commonly worsens an existing anxiety disorder, which may be a source of confusion for you and your physician. Myra, age forty-nine, had had a great deal of stress in her life and had been suffering from a generalized anxiety disorder for quite a few years. She was intermittently prescribed Valium and other medications, which helped control her anxiety, and she had learned through the years to manage her symptoms. When she was diagnosed as hypothyroid, her doctor prescribed a high dose of thyroid hormone from the beginning instead of starting her at a low dose and stepping it up gradually. After a few days on the medication, Myra began to experience severe panic attacks and increased anxiety symptoms. She woke up in the middle of the night with a rapid heartbeat, a hot and sweaty feeling, and a choking sensation "as if somebody was pressing on my neck."

She took the thyroid pill for a couple of weeks, but her symptoms kept getting worse. She reached the point of experiencing ten to fifteen panic attacks a day. Finally, she concluded that this might be caused by the thyroid medication and stopped taking it on her own, which caused the anxiety symptoms and panic attacks to diminish. Later, even small doses triggered panic attacks. It became a vicious cycle in which Myra associated the thyroid hormone treatment with a worsening of her symptoms. After I counseled her about the nature and cause of her symptoms, she finally agreed to try the graduated dosage method. The dose was eventually increased, her thyroid levels became normal, and the exaggerated anxiety symptoms were resolved. In fact, Myra now suffers from less anxiety than she did before the doctors diagnosed her thyroid condition. Myra's anxiety disorder was probably caused

in part by the underactive thyroid, but when too much thyroid hormone entered her system at once, the anxiety became worse.

Approximately six weeks after you reach the estimated dose that is expected to bring your thyroid levels close to normal, your doctor will typically order a TSH test so the dose can be adjusted. The size of the adjustment needed should be determined based on the result of the new TSH test. How fast this adjustment is made also depends on your age and on whether you suffer from a heart condition.

The dose of thyroid hormone may need to be adjusted once or twice before you reach a normal TSH level. Do not have your TSH tested more often than every six to eight weeks at the beginning. The criterion for successful therapy is to finally get TSH within a normal range and keep it there.

PROBLEMS DURING THE MAINTENANCE PHASE OF TREATMENT OF HYPOTHYROIDISM

Once your thyroid test levels have stabilized, you need to make sure that your doctor does not prescribe too much or too little thyroid hormone. In one study, 14 percent of hypothyroid patients taking thyroid hormone were over-replaced, and 18 percent were underreplaced.⁷

People taking too much thyroid hormone will have a low TSH reading and may develop cardiac problems.⁸ Postmenopausal women will have accelerated bone loss, which predisposes them to osteoporosis.⁹ Even minimal thyroid hormone excess may make you irritable and cause you to suffer from undue nervousness, anxiety, or hypomanic behavior.¹⁰

Consider the case of Catherine, a thirty-four-year-old sales manager who was diagnosed with hypothyroidism by her internist. The dose of thyroid hormone she was receiving exceeded her needs. She began suffering from shakiness, insomnia, and palpitations; she also noted that her eyes seemed to be locked in a stare. She described symptoms of hypomania. "I couldn't sit still for any length of time," she said. "I became too energetic and obsessive-compulsive about cleaning my house and working long hours. I would get up in the middle of the night to clean up."

Catherine felt she was possessed and had lost control of her body. Deep inside, she noted that the person she had become was not her usual self. She experienced rage for no apparent reason and felt compelled to ride a bicycle in a remote area, pedaling as hard and fast as she could, until she felt the rage subside.

These changes had occurred so quickly that Catherine didn't understand what was happening to her. She thought she was losing her mind. Her heart was beating at such a fast pace that she was afraid to go to sleep for fear she would have a heart attack in her sleep. "I wanted so badly to be my old self—

the me that I knew and loved. I was afraid of this new person, and I wanted to feel healthy again." Catherine did indeed feel healthy again once her dose of thyroid hormone was reduced to a more appropriate level.

Do not increase the dose on your own or insist that your physician increase the dose because you have not felt an improvement and believe that a higher dose would make you feel better. Increasing the dose may cause new problems. Do not decrease or stop the thyroid medication on your own or skip taking it once or twice a week either. Some patients phone their doctors and try to convince them to alter their prescription without testing and/or follow-up. This can lead to a cumulative deficit or excess in thyroid hormone, which can cause a great deal of suffering.

Sophia had been receiving 150 micrograms of levothyroxine daily for three years. One day, she called her physician and mentioned that she had heart palpitations. These were in fact due to anxiety over another family member's health problems. Sophia's physician decreased the dose from 150 micrograms to 75 micrograms and told her to come to his office for repeat thyroid testing three months later. Because of her personal problems, Sophia did not take the time to have a follow-up test until a full year later. During that year, she had a wide range of symptoms that she attributed to stress.

When Sophia finally did return to her physician for follow-up, her tests showed hypothyroidism because she was taking only half the dose required to maintain normal thyroid levels. After the dose was readjusted, her symptoms gradually disappeared. In fact, she became better able to cope with her family problems.

Another unfortunate problem that still happens to some hypothyroid patients taking thyroid hormone occurs when general practitioners instruct them to stop taking their medication. Crystal, who was hypothyroid, was taken off thyroid hormone by her general practitioner when he saw that her thyroid test results were normal while she was taking thyroid hormone. What this physician probably overlooked is that the test results were normal because of the treatment. Three or four months after she stopped taking the medication, Crystal suffered from serious depression and had many symptoms of hypothyroidism. She went back to her doctor, and he said her symptoms were caused by stress. When I tested Crystal and found her hypothyroid, I placed her back on thyroid hormone treatment, and she has done well ever since.

The likelihood that you are under- or overcorrected is extremely high if your physician does not monitor TSH when you are taking thyroid hormone. Many physicians unfortunately continue to run T3 and T4 tests and often try to make treatment decisions based on these tests instead of TSH. T4 and T3 test results are also easily misinterpreted when the levels of the proteins carrying thyroid hormone in the blood are abnormal (see Chapter 14). In addi-

tion, several medications can alter thyroid hormone levels. For instance, Dilantin and aspirin may lower the total T4 reading, even though thyroid function is normal.

To achieve a good balance, you need to have your TSH maintained between 0.5 and 2.0 milli-international units per liter while receiving thyroid hormone treatment. A TSH ranging between 2.0 and 4.5 may mean some thyroid hormone deficiency (see Chapter 14). Yet a recent survey comparing how thyroid specialists and primary care physicians administer thyroid medication to hypothyroid patients indicated that primary care physicians are in general satisfied when the TSH is maintained between 0.5 and 5.0 milli-international units per liter.¹¹ Often all it takes to restore normal thyroid status is a small increase in the dose, which might have significant effects on the way you feel. If, despite having a normal TSH for at least three to four months, you continue to suffer from depression or symptoms of underactive thyroid such as lack of energy, cognitive changes, low mood, tiredness, dry skin, and pains and aches, you may experience an improvement by combining T4 and T3 in your treatment program (see Chapter 18). Your system may still be lacking some T3 even though your blood test results are normal.

OPTIMIZING YOUR USE OF THYROID HORMONE PILLS

Many foods, nutrients, and drugs can interfere with thyroid hormone absorption. For example, if you take iron (ferrous sulfate) at the same time as thyroid hormone, it will bind with some of the thyroid hormone and block its absorption. Fiber and calcium carbonate, if taken simultaneously with thyroid hormone, may interfere with absorption of the hormone.

Several medications, when taken together with thyroid hormone, can also decrease the availability of the hormone by interfering with its absorption in the gastrointestinal tract. For instance, antacids containing aluminum (Maalox), drugs used to lower cholesterol (cholestyramine, Questran, colestid), and sucralfate (an aluminum-containing ulcer drug) cause decreased absorption from the gastrointestinal tract.

To avoid this interference effect, take your thyroid hormone at least three to four hours before or after you take these medications. I recommend that you take your thyroid pill at the same time every day, at least thirty to forty minutes before breakfast on an empty stomach with two or three cups of water. Take your nutritional supplements and drugs at lunch and suppertime.

Some medications increase the rate at which your body clears thyroid hormone. If you are taking a stable dose of thyroid hormone and were recently prescribed the drugs Dilantin (phenytoin), Tegretol (carbamazepine), or phenobarbital, you may need a change in your dosage. Do not forget to mention these new medications to the physician treating your hypothyroidism so that he or she can retest your thyroid.

Generally speaking, it is quite safe for women with a thyroid imbalance to use oral contraceptives, even while taking appropriate thyroid medication. Oral contraceptives containing estrogen and estrogen replacement therapy cause a slight increase in the need for thyroid hormone replacement, because estrogens cause an increase in thyroid hormone-binding proteins in your bloodstream.¹² If you have been receiving a stable dose of thyroid hormone and have begun taking an oral contraceptive or hormone replacement therapy, it is wise to have your physician order a TSH test three months after you start the estrogens. By that time, your blood levels should have stabilized so that the TSH test result will be reliable for the purpose of a dose adjustment. If you have taken Tamoxifen, an antiestrogen used for the treatment of breast cancer, for more than one year, you may require more thyroid hormone.¹³

HOW OFTEN SHOULD YOU BE RETESTED?

Some doctors recommend that when a patient's thyroid function has returned to normal with a specific dose of thyroid hormone replacement, further thyroid tests should be done once a year. You may have an unstable thyroid condition, however. Patients with Hashimoto's thyroiditis may have a concomitant Graves' disease that may be more active at some times than at others. If you have hypothyroidism due to Hashimoto's thyroiditis and are taking a stable dose of thyroid hormone, a flare-up of Graves' disease and production of the antibodies that stimulate the thyroid gland may make you require less thyroid hormone.¹⁴ Rarely, it can even cause the rapid onset of hyperthyroidism and require stopping thyroid hormone treatment.¹⁵ Several of my patients with underactive thyroids suffer from frequent fluctuations in the activity of the gland. You need to be aware that the residual activity of the gland affected by Hashimoto's thyroiditis does change and can fluctuate over time.¹⁶ As a result, patients with an underactive thyroid may require frequent adjustments in the dose of thyroid hormone.

Retesting patients once a year will ignore possibly significant changes in their thyroid activity. Some patients may suffer from the effects of thyroid hormone excess or deficiency and not know it. Because changes in thyroid levels in patients receiving stable doses of thyroid hormone are common, a better recommendation is that thyroid tests be done regularly every six months and that the test results be closely scrutinized in conjunction with a careful assessment of symptoms.¹⁷ Unfortunately, hypothyroid patients are in general not monitored adequately. One recent study showed that only 56 percent of hypothyroid patients treated with thyroid hormone were monitored at the minimum recommended frequency.¹⁸ If you are hypothyroid as a result of the treatment of Graves' disease, you may need more frequent testing (every three to four months), at least initially.

Three years previously, doctors in her managed care health program had diagnosed Wanda with an underactive thyroid. The thyroid hormone she was taking made her symptoms subside. She was retested once and was told to continue the same dose of medication. A few months later, she began experiencing tremendous stress at home. She complained of many symptoms that her primary care physician never attributed to possible hypothyroidism. She had understood from her physician that her thyroid problem was taken care of as long as she took the medication.

Wanda said, "I was absolutely zonked out. I would walk in and lie down and go to sleep at 6:30. I was very depressed. When I told my primary care physician I was having dizziness, he put me on motion sickness medicine, which I took only one time because it made me feel bad."

When Wanda was finally tested again two years later, she was quite hypothyroid. Adjustment of her thyroid medication resolved her tiredness and other symptoms. After that experience, Wanda decided to change her health insurance coverage and her doctor.

Many patients believe that having an underactive thyroid means that the gland has quit working and all they have to do is take the same pill for their entire lives. Therefore, they try to get refills for their medication over the phone, believing that there is no need to be examined or tested. This may result in unhappy surprises.

The Barnes and Wilson Treatment Methods

In the 1950s, it was recognized that symptoms such as fatigue, headaches, irritability, menstrual irregularities, muscle aches and pains, lethargy, and emotional instability in women could be interpreted in different ways by different doctors.¹⁹ Based on these symptoms, an endocrinologist might diagnose hypothyroidism, whereas a psychiatrist might diagnose depression or melancholia.

The late Broda O. Barnes, in his book *Hypothyroidism: The Unsuspected Illness*,²⁰ advocated thyroid hormone treatment for people suffering from various symptoms of an underactive thyroid such as headaches, fatigue, infections, skin conditions, infertility, arthritis, and weight problems. Barnes suggested that the way to diagnose hypothyroidism and to monitor treatment is to take the patient's basal temperature. This approach was based on research he published in the early 1940s showing that hypothyroidism is associated with low basal temperature and that many people with low basal temperature and symptoms of hypothyroidism improved with thyroid hormone treatment.²¹

Some patients treated according to the Barnes method with natural thyroid hormone do indeed have hypothyroidism and do respond to the

treatment (see Chapter 14). Thus, a number of physicians began to advocate thyroid hormone as a treatment for patients suffering from tiredness, depression, or other nonspecific complaints accompanied by a low basal temperature—without thyroid testing. They believe that low basal temperature is always an indication of low thyroid. A low temperature, however, could merely be an indication that the patient's metabolism is slower than normal. It could also be seen in patients with depression, post-traumatic stress syndrome, eating disorders such as anorexia nervosa, and renal failure. If the symptoms improve or resolve with thyroid hormone treatment, it could in many cases be due to the antidepressant effect of the medication rather than the correction of hypothyroidism. Ideally, the use of body temperature to diagnose and monitor treatment of hypothyroidism should be abandoned.

Other doctors also advocate the use of thyroid hormone to treat symptoms that follow a major stress, attributing them to low levels of T3 in our bodies. For instance, Dr. E. Denis Wilson, in his book *Wilson's Syndrome: The Miracle of Feeling Well*, described a particular syndrome as a cluster of debilitating symptoms brought on especially by a significant physical or emotional stress that can persist even after the stress has passed.²² Wilson attributed this persistence to maladaptive slowing of metabolism, characterized by a body temperature that runs, on average, below normal and thyroid blood tests that are often in the normal range. Curiously, many of the symptoms he referred to—fatigue, depression, headaches, migraines, premenstrual syndrome (PMS), anxiety, panic attacks, irritability, hair loss, decreased motivation and ambition, inappropriate weight gain, decreased memory and concentration, insomnia, and intolerance to heat and cold—are symptoms of depression. He also included irritable bowel syndrome, delayed healing after surgery, and even asthma.

Wilson postulated that this suffering results from a deficit in the activity of the enzyme that converts T4 to T3 brought on by a physical or mental stress. He hypothesized that a decrease of T3 in the organs causes a slowing of the metabolism, reflected by a drop in temperature.

Wilson also postulated that the decrease in the enzyme responsible for the conversion of T4 to T3 and the slowing of metabolism occur as a result of the stress and do not return to normal after the stress has passed. Therefore, despite normal thyroid levels in the blood, hypothyroidism remains as a residual effect of post-traumatic stress syndrome. In his book, Wilson recommended treating patients having these symptoms with a high dose of T3 and monitoring and adjusting the T3 dose based on basal temperature, rather than on thyroid testing.

There is, however, no scientific basis for true hypothyroidism in these patients. Even if some of the patients diagnosed as having Wilson's syndrome

are truly hypothyroid, they should not be treated with such high doses of thyroid hormone as to make them hyperthyroid.

Treating patients indiscriminately with high doses of T3, failing to do thyroid testing, and adjusting the dose only according to basal body temperature is unacceptable even for thyroid specialists who have developed an expertise in the interaction between the brain and the thyroid.

Kathleen, a thirty-seven-year-old nurse, was referred to me by a friend of hers. Her amazing story illustrates how the mislabeling of suffering and inappropriate use of thyroid hormone can result in further suffering. When I saw Kathleen for the first time, she brought with her a pile of temperature charts and a sheet outlining a complicated protocol of thyroid hormone treatment based on checking basal temperature that had been given to her by a physician three months previously. The doctor had diagnosed Kathleen with Wilson's syndrome and told her to take T3 (Cytomel) three times a day. She was to adjust the Cytomel dose according to temperature readings taken three times a day. As long as her average daily temperature was lower than 97.8 degrees Fahrenheit, she was to increase her dose of Cytomel. She was guided during treatment by a manual for Wilson's syndrome.

Before she began having symptoms, Kathleen was experiencing tremendous stress at home dealing with a chronically ill husband and serious financial difficulties. Although her symptoms fit the description of Wilson's syndrome, they were all symptoms of depression as well. When given a very high amount of T3, Kathleen became severely hyperthyroid, which resulted in severe anxiety symptoms, hypomanic behavior, and irregular heartbeat.

I urge doctors who treat hypothyroidism and depression to monitor their patients with thyroid testing and not use doses of thyroid hormone that exceed what the body and brain need to function properly.

Correcting the Overactive Thyroid and Side Effects

If you've been diagnosed with an overactive thyroid due to Graves' disease, understanding the available treatments will allow you to work with your doctor in selecting the best option.

TREATMENT OPTIONS

The three major methods currently used to treat Graves' disease—administering antithyroid drugs, destroying a significant portion of the thyroid gland with radioactive iodine, and surgically removing a significant portion of the gland—address the consequences rather than the cause of the condition.²³ A potential new treatment target for Graves' disease is a medication that could block the

effects of the thyroid-stimulating antibody (the antibody that causes the over-active thyroid) on the thyroid gland.²⁴

ANTITHYROID DRUGS

Doctors may prescribe antithyroid drugs such as methimazole or propylthiouracil (PTU) for six months to two years (the average is one year) to maintain normal thyroid levels and perhaps achieve a remission. (You have achieved a remission if, after several months of treatment, you no longer require medication to maintain normal levels of thyroid hormone and TSH.) Antithyroid medications are picked up by the thyroid gland, where they inhibit the production of thyroid hormone. They also have an effect on the immune system, diminishing the autoimmune attack on the thyroid. In general, 30 to 50 percent of patients achieve a remission when they take one of these medications for at least six months to a year.²⁵ (Even if you achieve a remission, you are always at risk for having a relapse. Graves' disease tends to relapse more often in the spring and summer, according to research.)²⁶ Women in their reproductive years with mild hyperthyroidism and small goiters respond well to this form of treatment.

Methimazole lasts longer in the body, and you can take it as a single daily dose if you require 30 milligrams or less, whereas PTU should be taken three to four times a day. With either medication, experienced physicians can often maintain thyroid function in the normal range for as long as the treatment is continued.

Several common minor side effects may occur during treatment and often resolve spontaneously or after the patient switches to another medication. In some instances, the persistence of such symptoms requires stopping the medication. These side effects include:

- Itching
- Skin rash
- Hives
- Joint pains
- Fever
- Upset stomach
- Metallic taste

One of the adverse effects of antithyroid medications that often worries patients is agranulocytosis, a reaction in the bone marrow, which suddenly stops manufacturing white blood cells. This frightening complication, which occurs more frequently in the first three months of treatment, should not cause you undue anxiety because it is quite rare. One study showed that this complication occurs in approximately three to four of every one thousand

people treated with medication each year.²⁷ Although physicians usually do not monitor your white blood cell count, it is safer if this is done each time you have your thyroid tested while being treated. If a sore throat, a mouth sore, or an infection occurs, you should report it to your doctor and have your white blood cell count measured. If the white cell count drops significantly, you need to stop the medication immediately. The low white blood cell count can result in a blood infection. Your doctor will often recommend isolation in a hospital room, antibiotics, and treatment with medications that raise your white blood cell count to appropriate levels.

Liver damage, another unusual complication of antithyroid medications, is rather serious and often occurs in the first few months of treatment as well. For this reason, your doctor will typically test your liver on a regular basis. If liver tests become abnormal, the medication should be stopped immediately.

Other serious, albeit rare, side effects from using antithyroid drugs include:

- Suppressed production of red blood cells in bone marrow (aplastic anemia)
- Low platelet count
- Inflammation of blood vessels (vasculitis), causing symptoms similar to lupus; may lead to kidney disease, arthritis, and life-threatening lung complications

If you have tolerated the medication well, you need to stay on it for at least eight to twelve months to give it a chance to produce the remission for which you are hoping. During treatment, you need to be retested (by checking not only TSH but also free T4 and free T3) every two months and have your dose adjusted. Typically, the dose is gradually reduced as your requirement for the medication decreases and the activity of the disease slows down. At the end of the treatment period, most doctors tend to stop the medication abruptly to see whether you stay normal without it. With methimazole, I usually decrease the dose first by 5 milligrams daily until the patient has reached a dose of 5 milligrams per day; if thyroid levels remain normal on this low-dose regimen for a few months, I will further drop it to 5 milligrams every other day, then to 5 milligrams twice a week before stopping the medication. Only if the TSH remains normal while you are taking 5 milligrams twice a week for at least two months should you stop taking the medication. Recent research showed that when patients with Graves' disease are treated for six months with a protocol similar to the one I use and their blood tests are maintained normal, 81 percent of them went into remission.²⁸ If the TSH is not normal, you may become hyperthyroid again, and the vicious cycle will resume. If the TSH level becomes low even though thyroid hormone levels

are normal, that means your gland still requires medication. In this case, the dose of medication will need to be increased to achieve normal levels again. At this point, you may want to proceed with an alternative treatment or continue the medication for another six-month period before you try stopping it again.

While you are being treated for hyperthyroidism, I urge you to take adequate amounts of antioxidants. Antioxidants will reduce your symptoms and other effects of hyperthyroidism on your body. Antioxidants such as melatonin, quercetin, and *N*-acetyl cysteine prevent DNA damage promoted by too much thyroid hormone. For this reason you need to pay attention to your intake of antioxidants regardless of which treatment you are receiving for your overactive thyroid.

DESTROYING A SIGNIFICANT PORTION OF THE THYROID WITH RADIOACTIVE IODINE

Another treatment method is to destroy a significant portion of the thyroid gland with radioactive iodine (radioiodine). This method is simple. You are given a small amount of radioactive iodine to drink. The amount is either fixed (10–20 millicuries) or based on the size of your thyroid gland and its level of activity after you have had a radioactive iodine uptake test (see Chapter 14). This method is the preferred form of treatment for toxic nodules and multinodular toxic goiters. Doctors also find this method effective for treating nontoxic goiters that have caused pressure in the neck, including difficulty swallowing.²⁹ For patients with Graves' disease, this method should be chosen if you are unlikely to achieve a remission with medications or if you have experienced side effects from the medications. Doctors frequently recommend this method for men and people older than forty-five.

Also, your doctor will often prescribe radioactive iodine to treat your Graves' disease if, after a year or two of medication, your thyroid gland continues to be overactive. In general, this method is used if, after you have achieved a remission with medication, your thyroid becomes overactive again months or years after you completed the course of medication.

Even when radioactive iodine is chosen from the outset, some doctors prescribe an antithyroid medication for two months prior to the radioiodine treatment to bring your thyroid levels down to normal first. I often elect this last approach so that the patient improves—emotionally and physically—and has time to learn more about the condition and the treatment options. Using medications initially will also help determine whether your gland is responsive to medication. It will often prevent you from rapidly swinging from hyperthyroidism to severe hypothyroidism. You will be asked to stop the antithyroid medication two to five days before the radioactive iodine treatment and to restart the medication at smaller doses three to five days after the treat-

ment. If the medication you have been taking is PTU, make sure that you are switched to methimazole three to four weeks prior to the radioiodine treatment. Recent research has concluded that PTU treatment causes the gland to become more resistant to radioiodine treatment.³⁰ Research has shown that methimazole treatment before radioactive iodine treatment does not affect the effectiveness of radioactive iodine treatment.³¹

The purpose of radioiodine treatment is to destroy enough of the thyroid gland so that the remaining part does not produce excess thyroid hormone. The destruction begins within days after the treatment and may continue over a period of several years. Many patients are led to believe that radioactive iodine rapidly destroys the entire gland, whereas most of the time it actually destroys only a portion. In fact, the amount of the thyroid gland destroyed with treatment varies from person to person because glands have different levels of sensitivity to the damaging effect of radioiodine. Very rarely do people become hyperthyroid again many years after treatment with radioactive iodine. One study showed that 55.8 percent of patients treated with radioactive iodine became hypothyroid one year after the treatment. But ten years after the treatment, 86.1 percent had become hypothyroid.³²

Many doctors in the United States prefer this method because it is in general safe and effective. In many European countries and in Japan, doctors favor trying medications first. One treatment with radioiodine may not suffice. Nearly 30 percent of patients treated with radioactive iodine need to be retreated one or more times. It is important to select a dose of radioactive iodine that cures the excess thyroid hormone without having to administer additional doses. Young patients with very large thyroid glands, patients who have high thyroid hormone levels, and patients who are pretreated with antithyroid medications for more than four months are less likely to respond to low doses of radioactive iodine.³³ For these patients, a higher dose of radioactive iodine will be more effective.

This method should not be used if you are pregnant. If you are a woman of childbearing age, your doctor will typically order a pregnancy test prior to the treatment. This treatment should also be avoided in people having moderate to severe eye disease until the eye condition has become stable. It can cause or worsen eye disease in 15 percent of patients. For this reason, some doctors prescribe prednisone (a corticosteroid medication that slows down the inflammation in the eyes) for several weeks after radioactive iodine treatment, which may reduce the occurrence of eye disease.

Many people, when told about the option of radioactive iodine treatment, become concerned that it will cause long-term adverse health effects. However, radioactive iodine treatment has been used for more than fifty years, and there is no scientific evidence so far that the treatment causes thyroid cancer or leukemia. There is debate, however, about the increased risk

of cancer of the stomach, hypopharynx, and esophagus. One study, for instance, concluded that the occurrence of stomach cancer may increase years after the treatment, particularly in younger people.³⁴ Because these concerns are not quite settled yet, it is perhaps safer to treat children and adolescents with medications first and consider radioiodine treatment for young people as a last resort. Recent research has shown that most patients are currently treated with a much higher activity of radioactive iodine than they actually need to have their gland destroyed.³⁵ The higher-than-needed doses cause unnecessary radiation exposure for the patient, the family, and the public. High radioactive iodine activity also requires longer radiation protection for family members when you come back home.

Children born to women previously treated with radioactive iodine do not experience a significantly increased risk of genetic defects. Nevertheless, if you are treated with radioiodine, you should avoid becoming pregnant within six months after the treatment. It is not known, moreover, whether radioactive iodine received during the reproductive years will have any genetic or carcinogenic effects on future generations.

SURGICAL REMOVAL OF A SIGNIFICANT PORTION OF THE THYROID

Surgical removal of a significant portion of the thyroid gland (subtotal thyroidectomy) is not frequently used in the United States unless special circumstances exist. For example, for patients who choose not to take radioiodine and who have experienced reactions to medications, or have very enlarged thyroid glands and are concerned about eye disease, surgical removal of a part of the gland may be an option. Complete removal of the gland may relieve some of the symptoms in some persons suffering from thyroid eye disease. Another advantage of surgery is the rapid control of symptoms. The patient must be treated with medications (iodine and a beta-blocker) before the operation, however, to avoid complications such as thyroid storm that could develop as a result of surgery.³⁶

I tend to recommend surgery for children and adolescents who have not responded to the medication or could not tolerate it. Surgery often cures the condition and prevents fluctuation of thyroid levels and its detrimental effects on mood and behavior. A pregnant woman treated with medication who experiences significant side effects can be treated with surgery during pregnancy.

If you decide to have an operation, choose a surgeon who has continued and proven experience with thyroid surgery. This is crucial because surgical removal of the thyroid can result in impairment of the voice and problems with low calcium due to damage to the parathyroid glands (four small glands right behind the thyroid that control calcium metabolism). To ensure the best outcome, choose a surgeon who has done at least ten to fifteen thyroid

surgeries a year for the past two to three years. Ask about his or her track record. The procedure for Graves' disease is subtotal thyroidectomy, although some surgeons may recommend a total thyroidectomy for people with eye disease to help the eye problem. A total thyroidectomy, however, is more likely to cause complications such as low calcium and nerve damage. You also need to know that in nearly 30 percent of people who have a subtotal thyroidectomy, the thyroid gland will become overactive again in the future. If that happens, radioiodine treatment will be the best option. If you are planning to become pregnant right away, surgery may be the best alternative.

Surgical removal of the thyroid gland can also be performed with an endoscope through a small incision in the areola of the breast. The technique can also be used in patients with benign thyroid tumors or nodular goiters and even in patients with thyroid cancer. Endoscopic thyroidectomy is safer than conventional surgery and causes fewer complications to the recurrent nerve or the parathyroid glands.³⁷

A new treatment that has been shown to be effective in curing hyperthyroidism is thyroid arterial embolization, a method that consists of blocking blood supply to the thyroid gland. Prior to this treatment, you need to have a selective arteriography to visualize the blood vessels that supply blood to the gland, and this is associated with some risk. Research, however, has shown that this treatment generally does not produce serious complications. If thyroid levels remain high after the embolization, you may end up requiring additional treatment with antithyroid medications; however, one study showed that of patients treated with interventional embolization, nearly two-thirds regained normal thyroid function after the treatment.³⁸

Some patients with Graves' disease, frightened by the potential side effects of treatment, refuse the conventional treatments currently available and search for a holistic or naturopathic approach. There is, however, no other nonconventional treatment that has proven to be consistently effective.

MAKING THE RIGHT DECISION

If you have just been diagnosed with an overactive thyroid due to Graves' disease, you should discuss the three treatment options with your doctor and get advice on which method to choose. Some patients are more comfortable than others with taking the responsibility for contributing to this decision. If you have significant eye disease, you should not rush into radioactive iodine treatment because that may worsen your eye problems.

If you have Graves' disease, your thyroid gland may also contain a nodule that could be cancerous. For this reason, prior to deciding which is the most suitable treatment for your overactive thyroid you need to have an ultrasound of the thyroid gland. It will determine whether your gland contains

a thyroid nodule or not. One study found that 35.1 percent of 245 patients with Graves' disease who were evaluated by an ultrasound of the thyroid had a coexistent thyroid nodule. The striking finding in this research is that 3.3 percent of the patients studied also had thyroid cancer, which in more than half of them had already spread to lymph nodes or other areas.³⁹ In addition, research has shown that thyroid cancer may be not only more common in patients with Graves' disease but also more aggressive than in patients with normal thyroid glands.⁴⁰ For this reason, thyroid cancer should be detected as early as possible and should be treated aggressively in patients with Graves' disease. If the ultrasound does reveal a lump, a fine-needle aspiration biopsy (see Chapter 21) should be done *before* you receive the radioactive iodine treatment, since this treatment will affect the results of any biopsy performed afterward. If a cancer is present, then the treatment for both the overactive thyroid and the lump should be surgery.

Some endocrinologists recommend the same treatment for all their patients suffering from an overactive thyroid due to Graves' disease. This explains why a patient seen by two or three endocrinologists may be given different opinions with respect to treatment. The method chosen should in fact depend on several factors, including your age, whether you are a woman in your reproductive years, whether your overactive thyroid is severe, and how long you have suffered from hyperthyroidism before the diagnosis was made. The size of your thyroid gland and whether you have significant eye problems are, as I explained, other factors that ought to be taken into account in making the decision.

Claire, like many Graves' disease patients having no knowledge of the condition, became confused during her first visit with the endocrinologist. She said:

I went to see this one doctor, but my first visit was not a good visit. He came in with this one little lab report and said, "Okay, you have Graves' disease. We need to start you on these pills, and you're going to take them every day." He then went on to say, "But it's not going to do any good, so we might as well forget that, and we'll go ahead and give you the radioactive iodine. Let me just go ahead and schedule that, and we'll get it done in two weeks." I didn't like that. I still didn't know what anything was. I went back to my husband's doctor and asked for another referral.

Claire had mild hyperthyroidism and a small goiter. She was treated with methimazole for one year by another endocrinologist and achieved a remission. She has been off medication for almost two years, and her thyroid function has remained normal. If she had gone ahead with the radioactive iodine treatment, she could have become immediately hypothyroid. To avoid receiv-

ing the wrong form of treatment, ask your endocrinologist for specific reasons why one option is recommended over another.

Adriana, a thirty-three-year-old accountant, suffered unnecessarily for more than a year because she did not receive the right form of treatment. By the time she was seen by an endocrinologist, she had a big goiter and had been severely hyperthyroid for about two years. She described her first encounter with the physician. "We talked about what forms of treatment were available. My understanding was that I had to start with medication to control the hyperthyroidism, and if that didn't work within a few years, I would be given radioactive iodine to destroy the gland, and if that did not work, we could resort to surgery." She left the endocrinologist's office with a prescription for PTU.

Adriana took the antithyroid medication for a year and a half but did not achieve a remission. Many patients like Adriana who have large goiters and severe hyperthyroidism at the outset do not achieve a permanent remission with medications and should be considered for more radical treatment, such as radioactive iodine, from the beginning. Adriana had to take five to six PTU pills three to four times a day and her thyroid levels rarely reached normalcy, whereas she could have been offered radioiodine treatment much sooner.

"My dosage went up and down all the time," she said. "I was adjusted so often it was like riding a roller coaster. I just felt like the physician did not understand me or how truly ill I was. There was a little improvement, but many of my symptoms persisted. It was like trying to put out a forest fire with a fire extinguisher."

If medications are chosen to treat your condition, you need to commit to taking them daily as prescribed. Otherwise, you will prolong your suffering and be more likely to experience lingering effects down the road. Agoraphobia in particular can make a person unwilling to take medications.⁴¹ Agoraphobia is a form of anxiety disorder that may be triggered by hyperthyroidism, in which the sufferer becomes easily frightened and reluctant to leave home and face new people. If you have become agoraphobic or are experiencing other symptoms of an anxiety disorder, you are likely to do better with radioactive iodine treatment.

Many patients suffering from an overactive thyroid improve rather quickly when they are prescribed, from the outset, a beta-blocker such as propranolol (Inderal). I often prescribe propranolol at a dose of 40 to 60 milligrams four times a day for the first three weeks, then ask the patient to reduce the dose by half for another week or two while thyroid hormone levels are being brought down with antithyroid treatment. If you are treated with a long course of antithyroid medication, you may do better if you also take a tranquilizer such as alprazolam (Xanax). In Chapter 2, I explained how stress

generated by thyroid imbalance can become self-perpetuating and how stress can affect the activity of Graves' disease. Reducing the stress and anxiety by using mind-body relaxation techniques is certainly effective. But you may also need to use medication to alleviate your anxiety symptoms. This will increase your chances of reaching a remission.

You need to know that whatever method is chosen, you could be disappointed. For instance, you may take medications for more than a year and find that you are not responding and have to try another method, or you may be treated with radioactive iodine and find six months or a year later that you need another radioactive iodine treatment. You must be prepared for such disappointments. Sometimes the initially chosen treatment simply does not work, and alternatives must be considered.

WORKING WITH YOUR DOCTOR TO AVOID WILD SWINGS

Whether you are being treated with medication or have received radioactive iodine treatment, fluctuations in thyroid levels can be expected. You need to work with your doctor, however, to minimize the occurrence of major, rapid swings. Major fluctuations can cause you to experience significant emotional and physical suffering, including anxiety, variations in energy level, anger, and mood swings. Emotional instability may alter your brain chemistry and make you more vulnerable to mental anguish even after your thyroid is regulated. If these fluctuations in thyroid function occur while you are being treated with medication because the dose has not been adjusted smoothly, you will typically experience frustration and despair and your symptoms will persist. Your initial hope of ending your suffering dissipates and is replaced by anger at the physician and feelings of being condemned to suffer.

To avoid major swings in your thyroid levels, make sure that you are retested six weeks after starting the medication. Then you need to be retested every two months. Each time the levels are normal during the course of treatment, I typically decrease the dosage to avoid the occurrence of hypothyroidism. This is the best way to avoid major swings in thyroid levels.

Some early studies showed that combining methimazole at a steady dose to block the thyroid gland with thyroxine to replace the deficit caused by the methimazole (called a block-replace regimen) increased the remission rate. You are given a high dose of methimazole (30 to 40 milligrams daily) in conjunction with thyroxine. The thyroxine dose will be adjusted to maintain normal thyroid test results. More recent studies, however, have not confirmed that the block-replace regimen leads to higher rates of remission. Although the block-replace regimen allows the maintenance of stable thyroid hormone levels throughout the course of treatment,⁴² it is likely

to cause more side effects from the high dose of antithyroid medication.

People treated with radioactive iodine may also suffer wild fluctuations, which can be minimized or prevented. Although many patients assume that they take the radioiodine cocktail, their gland is destroyed, and that's the end of the story, it does not happen that way. Radioactive iodine has an initial "blasting" effect on the gland, which lasts a few months, and an ongoing destructive effect, which begins at the time of treatment and could go on for years—often many years. But what complicates the matter further is that the sensitivity and vulnerability to the radioactive iodine differ from one person to another. This explains why, after treatment with radioactive iodine, the thyroid hormone levels may remain high over the following several months or may plunge to very low levels within a few weeks. Even if you become hypothyroid very quickly after the treatment, the gland may recover, and you can become hyperthyroid again, or you may stay hypothyroid. Research has shown that nearly 15 to 20 percent of people treated with radioactive iodine experience within the first six months a temporary hypothyroidism, which lasts several weeks.⁴³ Under these conditions, if your doctor starts you on high doses of thyroid hormone thinking that you have become permanently hypothyroid, you may easily become hyperthyroid a few weeks later when your gland has recovered some of its function.

This instability of thyroid levels for a few months after the treatment can take a toll on your physical and emotional health. I have even seen a few patients who experienced clear-cut cases of fibromyalgia following the brutal swings of their thyroid levels resulting from their treatment.

While your thyroid gland is being destroyed by radioiodine, you need to receive treatment for as long as is necessary to maintain normal or near-normal thyroid hormone levels. Hyperthyroidism could worsen for a few days after the treatment as a result of stopping the antithyroid medication. One woman who received radioactive iodine treatment said, "It was not explained that I would be more hyper- before becoming hypo-. I woke up in the middle of the night with terrible anxiety. If the doctor had just explained to me what would happen after treatment with radioactive iodine, maybe I would have felt less anxiety and emotion. I would have known why things happened."

Avoid taking high doses of antithyroid medications after radioiodine treatment. A small amount may help bring down thyroid levels while the radioiodine is working, but high amounts can add to the radioiodine's effect and make you plunge rapidly into a severely hypothyroid state. After you receive the radioactive iodine treatment, you need to be retested four weeks later so that your doctor can adjust your medication.

Treating Thyroid Imbalances during Pregnancy

When a woman is pregnant, the demands on the thyroid gland increase significantly. In moderately iodine-deficient areas, the thyroid glands of pregnant women often become enlarged. This has been known since antiquity: ancient Egyptian hieroglyphics depict it clearly. The mother's gland has to provide extra thyroid hormone for herself and perhaps for the developing fetus. In iodine-deficient areas, the frequency of goiter during pregnancy increases because the gland attempts to overcome the deficiency of supplied iodine. But even when the iodine supply is adequate, the size of the thyroid gland may increase during pregnancy.

An underactive thyroid is quite common among women of childbearing age. It is estimated that 2 to 3 percent of pregnant women are hypothyroid when tested during the first trimester.⁴⁴ Even if your thyroid tests are normal in the first trimester of pregnancy, however, you could become hypothyroid sometime during the remainder of the pregnancy. If you are pregnant and have high levels of antithyroid antibodies in early pregnancy, reflecting Hashimoto's thyroiditis, you are more likely to be mildly hypothyroid in the second or third trimester. You are also more likely to have hypothyroidism at delivery. The thyroid gland simply cannot match the higher demands for thyroid hormone during pregnancy. I urge you to have thyroid antibodies and TSH level measured in early pregnancy, so you know whether you are at risk of becoming hypothyroid down the road before and after delivery. This way, you can be monitored and treated early. Pregnant women taking thyroid hormone for hypothyroidism often experience a significant increase in their thyroid hormone requirement, and researchers estimate that 80 percent of these women require an increase in the dose. This reflects both the increased need for thyroid hormone and the higher levels of the proteins that carry thyroid hormone in the bloodstream. Without proper thyroid balance, the pregnant hypothyroid woman has a higher chance of miscarrying or giving birth to a baby with congenital malformations.⁴⁵ Another possibility is that mental development of the fetus may be hindered, adversely affecting the baby's later intellectual growth.

When a pregnant woman is taking thyroid hormone for an underactive thyroid, she cannot rely on symptoms to signal whether her thyroid is well regulated. For this reason, periodic thyroid testing (every two months) is needed to ensure adequate thyroid levels throughout the pregnancy. Finding out that your levels are off while pregnant does not mean that they cannot be regulated quickly.

If you are pregnant and have an overactive thyroid caused by Graves' disease, you should be treated with antithyroid medications. If you were taking

methimazole before becoming pregnant, your doctor might switch you to PTU because of the possibility that methimazole may cause in the fetus a rare congenital abnormality of the scalp called aplasia cutis.⁴⁶ There is considerable doubt about this complication occurring as a result of methimazole, but many doctors feel it is safer to use PTU during pregnancy. As the pregnancy progresses, the activity of Graves' disease slows down, and the dose of antithyroid medication must be gradually reduced so that thyroid hormone levels remain on the high side throughout the pregnancy. PTU crosses the placenta and can cause hypothyroidism in the fetus if the dose is too high. Frequent monitoring is highly important. I recommend that if you are pregnant and suffer from an overactive thyroid, you should be tested every month until delivery so that your thyroid levels are maintained at high normal with the lowest dose of medication. Toward the end of pregnancy, you may not need to take the medication any longer because the immune attack on the thyroid will have slowed down significantly. However, it has been estimated that approximately 70 percent of patients with Graves' disease who are in remission during pregnancy have a recurrence within the first year after delivery.⁴⁷ To minimize the likelihood of recurrence of hyperthyroidism in the postpartum period, your doctor may advise you to continue medications at a low dose throughout pregnancy.

If you have recurrence of hyperthyroidism after delivery, the medication frequently must be restarted or the dose increased to avoid high thyroid hormone levels.

Antithyroid medications are excreted in the milk, with PTU apparently present in lower amounts than methimazole. Nevertheless, research has shown that methimazole at a dose of 20 milligrams or less a day is safe for newborns.

Important Points to Remember

- Choose a doctor who is knowledgeable in treating thyroid disorders and who can also deal with your emotions.
- If you are diagnosed as hypothyroid, the dose of thyroid medication that you need to take initially will depend on how high your initial TSH level is.
- Optimize your thyroid hormone treatment by taking your pill before breakfast, and avoid taking it with medication that will affect its absorption.
- If you are treated for an underactive thyroid, once your thyroid tests have become normal, you need to be retested approximately every six months.
- If you have an overactive thyroid, learn about the treatment options and discuss them with your doctor before making the decision. Learn about

side effects, too. No treatment is perfect. But choose a doctor who has expertise in treating Graves' disease.

- Work with your doctor to avoid major swings in thyroid hormone levels during treatment. These swings may be a bad experience for you and may cause you to suffer lingering symptoms after the imbalance is corrected.

CURING THE LINGERING EFFECTS OF THYROID IMBALANCE

If you have suffered a thyroid imbalance, your symptoms will typically resolve with adequate treatment. Sometimes, however, even after the physical and mental symptoms of hypothyroidism or hyperthyroidism have disappeared, you may still not feel like your old self. If your imbalance was severe or of long duration, moreover, you may continue to have emotional problems, anxiety, depressive symptoms, and even some residual cognitive deficits. As a result, you may not feel normal even though, technically and medically, you no longer have a thyroid imbalance.

Hyperthyroidism and hypothyroidism shake up your brain. Although you may recover completely if the imbalance is minimal and of short duration, a significant, long-term imbalance could affect your mind for a long time even after you've been properly treated. Thyroid imbalances can affect your brain chemistry in the same way as long-term abuse of alcohol or drugs! Yet your physician may not know about these lingering effects because they have not been widely publicized, discussed, or taught.

In this respect, conventional medicine has been unfair to thyroid patients with persistent symptoms. Because your doctor assesses whether you have been adequately treated for your thyroid condition by measuring blood hormone levels, he or she will look at the lab results and say, "Your thyroid test is normal; your symptoms are not due to your thyroid." Yet you may feel deep inside that your persistent suffering does have something to do with your thyroid. And you would be correct.

Imagine that your water bill has doubled in the past month and you suspect a leak in your house. You call the plumber, who inspects the pipes, sinks, and toilets. Finding no leak, the plumber says, "I can't do anything for you." But the outside pipe that runs from the meter to the house does have a leak. The plumber you called not only didn't see it but may even have believed it

wasn't his or her job to deal with it. This situation is analogous to the after-effects of thyroid disease. Often the symptoms are dismissed by the doctor treating the thyroid condition or the patient is referred to a psychiatrist because of the nature of the symptoms. Even though these symptoms are chronic, they may not fulfill the rigid criteria of mood disorders, so some patients are left further frustrated and misguided.

One of the most widely read endocrinology textbooks states, "Once thyroid hormone therapy is commenced, the recovery from the mental disturbances of hypothyroidism often lags behind the restoration of normal metabolism."¹ Typically, however, doctors fail to mention that the time lag may be quite long. This reality is haunting to the patient, family, and friends and confusing to many physicians.

From Depression to Lingering Anxiety and Stress

In hypothyroid patients, the most common residual suffering is the persistence of depression that was initially triggered by thyroid hormone deficit.² This kind of depression can take on a life of its own, unabated and untouched even after blood levels have returned to normal. A survey conducted in my outpatient clinic tells me that 25 percent of patients whose blood tests have become normal with thyroxine treatment have had persistent symptoms of depression. Many continue to be tired or exhausted and report that they have not returned to their "normal" selves. Hypothyroidism of long duration may also generate a situation similar to post-traumatic stress syndrome, in which the depression triggered directly or indirectly by the patient's thyroid condition affects his or her job or personal life in stressful ways that can become self-perpetuating and even overwhelming.

In some cases, the lingering depression and anxiety may remain unnoticed except for when it emerges every once in a while in response to new stresses. One patient, Rhonda, said, "After I got on a stable dose of thyroid hormone, the depression was better, but as soon as any stressors would enter into the picture, whether finances or trouble at my job, it would come back. As long as I wasn't stressed, and as long as my thyroid level was stable, I was fine."

Many patients with Graves' disease who have suffered from thyroid imbalance for quite some time without treatment become less emotionally tolerant and resilient after their overactive thyroid has been corrected than before the onset of Graves' disease. They may still feel angry and impatient, as well as depressed and anxious. Results of a survey published in the *Journal of Neuropsychiatry and Clinical Neurosciences* showed a significant persistent impairment in memory, attention, planning, and productivity in patients with Graves' disease long after their thyroid levels had become normal.³

Recently, research from Sweden has shown that patients with Graves' disease have a lower quality of life fourteen to twenty-one years after they were treated for an overactive thyroid.⁴ The patients had lower vitality and lower mood. The impairment of their quality of life and their mood disturbances occurred in the same way regardless of the treatment they received for their overactive thyroid. Another group of researchers in Germany showed that 35.6 percent of patients with Graves' disease who have had normal thyroid tests for more than six months after treatment of hyperthyroidism suffer from psychological distress and have high levels of anxiety, and 95.6 percent of them had clear-cut depression.⁵

Why these symptoms persist is not clear. It is possible that hyperthyroidism, being a form of severe mental stress, can cause residual abnormalities in brain function, as has been shown in concentration camp survivors.⁶ It is also possible that the lingering symptoms are related to brain cell damage caused by too much thyroid hormone, and this can make the patient unable to deal with stress the way he or she would without a thyroid imbalance.

Tiffany, who suffered from Graves' disease for two years prior to being diagnosed, had had stable thyroid tests for at least one year since receiving adequate thyroid hormone treatment. In a follow-up visit, she complained that she was no longer the same as she had been before her illness and was trying to find a reason for the way she was feeling:

I got in the habit of being that way but not as bad as when I was hyperthyroid. I am more tolerant now, but I still have waves of anger. I feel like I live alone. It is quite possible that I am depressed.

I have two nephews, and if I see them once a month, that's okay, and they only live six miles away from me. I never have been a big eater, but now I crave food, especially in the afternoon when I feel tense and tired. I'm generally a giving person, and now it's like I am not going to give anyone anything. Graves' disease has changed me.

Tiffany's stamina and energy levels are no longer the same as before her illness. Her case and others like hers raise many questions: Is she feeling different and low because she is missing a little T3 that her thyroid gland would normally have produced now that she is relying on T4 pills to maintain normal blood levels? Is a persistent chemical imbalance affecting her tolerance level, mood, and anger? If so, is this a residual, subtle chemical imbalance due to the flooding of brain cells by thyroid hormone when she was hyperthyroid? Or did the overwhelming effect of stress from the hyperthyroidism leave her with some form of post-traumatic stress syndrome?

Whatever the exact cause of the depression and emotional instability that continue to haunt you, you will benefit from engaging in the mind-body

program that I outline in this book including relaxation, yoga, and exercise. By doing so, you will help yourself get over these changes, and you will help the tiredness, low coping ability, and concentration and memory impairments to subside. Tiffany's experience was typical. After a few months of relaxation sessions and regular exercise, her temper and tolerance level improved dramatically, while her thyroid levels stayed normal.

If your symptoms are severe, you are likely to be helped by antidepressants, such as selective serotonin reuptake inhibitors (SSRIs). In the next chapter, you will learn how combining T4 and T3 for the treatment of your underactive thyroid may be the solution for your lingering symptoms (see Chapter 18).

Using Mind-Body Techniques to Avoid Lingering Effects

Techniques such as meditation, music therapy, dance or movement therapy, yoga, or tai chi enhance the strength of your mind and its ability to master your body's functioning. Jon Kabat-Zinn, founder of the Stress Reduction Clinic at the University of Massachusetts Medical Center, has said, "Yoga does far more than get you relaxed and help your body to become stronger and more flexible. It is another way in which you can learn about yourself and come to experience yourself as a whole, regardless of your physical condition or level of fitness."⁷ Through the mind, you can improve your overall wellness. Mind-body interventions, including relaxation, meditation, imagery, biofeedback, and hypnosis, have been used for several medical conditions.⁸ These practices will have a tremendous positive effect on your body image and self-esteem as well. They will also help your depression and may even help you with your communication skills. Mind-body techniques will improve the efficiency of other treatments and the quality of life in patients with mental suffering. Mind-body practices produce a physiological relaxation response that causes a release of nitric oxide, which lowers the effect of stress in our body and mind.⁹ Mindful exercise (a combination of slow, graceful movements and peaceful mental imagery) is much more effective for women than for men in enhancing feelings of well-being. Choose the technique best suited to your lifestyle. For instance, because of time constraints, you may wish to combine an aerobic exercise program with music therapy.

Dr. David Brown compared the effect of an exercise-training program three times a week using moderate-intensity walking (65 to 75 percent of heart rate reserve), low-intensity walking (45 to 55 percent of heart rate reserve), low-intensity walking in conjunction with relaxation (from wearing a portable cassette player and headphones), and mindful exercise (tai chi) for forty-five minutes three times a week.¹⁰ He showed that the use of

mindfulness in conjunction with exercise has a greater effect on psychological well-being than just walking. In meditation and relaxation techniques, thoughts are structured and focused on a sound, word, prayer, or phrase. Negative thoughts are overridden by focused thinking. Such techniques are suitable for people suffering from lingering depression, anxiety, and chronic fatigue and for older people who may not be able to engage in vigorous exercise.

Tai chi, an ancient Chinese exercise, combines an aerobic type of exercise and relaxation and has done wonders for many of my patients. Tai chi will provide protection against cardiovascular disease and improve physical health. Scientific research has shown that tai chi will improve your mental health and emotional well-being and will reduce stress.¹¹

If you suffer from lingering anxiety and panic attacks, meditation and biofeedback might be the solution. During biofeedback, sensors are applied to some areas of your body and connected to a device that detects and monitors body functions that are considered to be involuntary but which you can learn to control through practice.

Meditation has a major beneficial effect on your physical and psychological symptoms. It will lower anxiety, pain, and depression and will improve your self-esteem.¹² Mindfulness meditation, in conjunction with qigong movement therapy, can be of great help. It has been shown to be quite effective in the treatment of fibromyalgia.¹³ Living mindfully and using meditation may be an important component in the treatment of residual effects of thyroid disease. But whether you choose biofeedback or meditation, do not forget your aerobic exercise.

For some people with other health problems that prevent them from exercising, guided imagery and art therapy can be helpful. In guided imagery, you focus on images or sensations that help you relax. Many believe that it can also enhance the strength of the immune system. It certainly helps relieve anxiety.

Self-help groups are an important mind-body resource that helps persistent sufferers cope better with their symptoms and speed up their recovery. Meeting as a group, expressing personal thoughts, and exchanging experiences with others have helped many people suffering from conditions ranging from obesity to alcoholism in which the mind, attitude, and behavior play an important role in the recovery process. These groups help you feel and see that you are not alone. I find it very helpful for thyroid patients to meet and discuss their symptoms and problems. You may also want to start practicing a mind-body technique with other patients from the group. To find out about local patient support groups, call one of the main thyroid patient organizations (see the Resources at the end of the book).

Counseling and Psychotherapy

Many thyroid patients need counseling. Counseling and psychotherapy are an important part of mind-body programs. Sessions can be designed to help you overcome your lingering suffering once thyroid tests have become normal. Counseling may also help you resolve many of the personal and relationship issues generated by the thyroid imbalance. The inability to function as before and the relationship problems generate a feeling of loss similar to grief. You may feel that you have lost control of your life and are unable to regain the happiness that you enjoyed before the thyroid disorder. Counseling will help you come to terms with your loss and feel hopeful and optimistic about your life and your future.

Yet many doctors do not counsel their patients. Even in a primary care setting, only a third of patients suffering from depression who need counseling receive a maximum of three minutes of counseling per visit. Lack of counseling is even worse in prepaid health care plans.¹⁴ Many patients have already gone through a great deal of stress by the time they're diagnosed, and many will continue to deal with personal or job-related problems generated by the imbalance. These psychological issues need to be addressed, and a therapist can help you deal with them.

Supportive psychotherapy is needed most by patients with lingering symptoms of depression and anxiety. There are other practical methods of psychotherapy that can help. In behavioral psychotherapy, the therapist may focus on identifying what in your life is likely to trigger your symptoms. The aim is to help you understand and change the way you react to situations. In cognitive therapy, the therapist looks for patterns of thinking that are likely to cause symptoms. These methods do not address your unconscious conflicts, but they are aimed at correcting your symptoms. The therapy will help you to regain your emotional balance, cope better with the stress, and strengthen your defense mechanisms so that you regain control. Behavioral/cognitive psychotherapy has been shown to be as effective as medication in the treatment of mild depression and anxiety disorder.¹⁵ I find behavioral/cognitive psychotherapy extremely helpful for thyroid patients with residual symptoms, even when their thyroid imbalance has been properly treated.

You may also need marital or couples therapy. Ask for a referral from your primary care physician or endocrinologist, who will probably know of a few competent therapists who have developed a great deal of experience dealing with marital issues. The couples therapist may be a psychiatrist, a psychologist, or a psychiatric social worker. Get two or three recommendations and meet with the therapists to discuss their

training, experience, and degrees before deciding on one and beginning the sessions.

Finally, psychodynamic psychotherapy, which focuses on addressing unconscious conflicts and resolving the root of psychological conflicts, may be necessary for patients whose thyroid imbalance unmasks deep-rooted psychological issues or who have psychological issues independent of the thyroid imbalance. Psychodynamic psychotherapy can be an expensive and protracted type of treatment, but it is the only way to address deeply rooted psychological problems.

Selecting the Right Antidepressant

If your residual emotional symptoms are overwhelming and you have not been able to break the vicious cycle of depression, stress, and anxiety while you are taking the right amount of L-thyroxine, you are likely to improve if you change your treatment to a combination of T4 and T3 (for details, see Chapter 18). However, that may not be enough, and you may benefit from taking an antidepressant. When you use an antidepressant, you need to educate yourself about its most common side effects and how often they occur. You also need to know that it takes time for an antidepressant to begin working. Many need at least six to eight weeks to elevate mood.

The currently available antidepressants include SSRIs, SNRIs, atypical antidepressants, tricyclic antidepressants, and monoamine oxidase inhibitors (MAOIs). Generally speaking, the most currently prescribed antidepressants are the SSRIs, the SNRIs, and the atypical antidepressants because of their effectiveness and also because of their lower adverse-effects profile. The accompanying table lists the most commonly prescribed antidepressants.

COMMONLY PRESCRIBED ANTIDEPRESSANTS

Drug	Trade Name	Common Side Effects
SELECTIVE SEROTONIN REUPTAKE INHIBITORS (SSRIs)		
Fluoxetine	Prozac, Sarafem	Drowsiness, headaches, nervousness, insomnia, fatigue, sexual problems, sweating, weight changes, nausea, diarrhea
Sertraline	Zoloft	
Citalopram	Celexa	
Escitalopram	Lexapro	
Fluvoxamine	Luvox	
Paroxetine	Paxil	

Drug	Trade Name	Common Side Effects
SELECTIVE NOREPINEPHRINE REUPTAKE INHIBITORS (SNRIs)		
Reboxetine	Edronax	Dry mouth, constipation, insomnia, sweating, tachycardia, urinary retention, dizziness
Atomoxetine	Strattera	Dizziness, dyspepsia, nausea, vomiting, decreased appetite

SELECTIVE SEROTONIN REUPTAKE INHIBITORS AND SELECTIVE NOREPINEPHRINE REUPTAKE INHIBITORS (SSRIs + SNRIs)

Venlafaxine	Effexor	Drowsiness, dizziness, nausea, appetite changes, constipation, dry mouth, insomnia, nervousness, sweating, change in blood pressure, muscle weakness
Duloxetine	Cymbalta	

NOREPINEPHRINE-DOPAMINE REUPTAKE INHIBITOR

Bupropion	Wellbutrin	Agitation, anxiety, insomnia, weight loss, nausea, dry mouth, sweating, seizures
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TRICYCLIC ANTIDEPRESSANTS

Amitriptyline	Elavil, Endep	Drowsiness, dizziness, dry mouth, blurred vision, constipation, urinary retention, changes in sexual function, increased heart rate, headache, low blood pressure, sensitivity to sunlight, increased appetite, weight gain, nausea, weakness
Doxepin	Sinequan, Adapin	
Imipramine	Tofranil	
Nortriptyline	Pamelor, Aventyl	
Desipramine	Norpramin	
Clomipramine	Anafranil	
Protriptyline	Vivactil, Triptil	
Trimipramine	Surmontil, Rhotrimine	
Amoxapine	Asendin	

MONOAMINE OXIDASE INHIBITORS (MAOIs)

Phenelzine	Nardil	Drowsiness, dizziness, fatigue, nausea, bowel habit changes, dry mouth, light-headedness, low blood pressure, changes in sexual function, sleep disturbances, tremor, decreased urine output, weight gain, blurred vision, headache, increased appetite, sweating
Tranylcypromine	Parnate	
Selegine	Emsam	
Isocarboxazid	Marplan	

Drug	Trade Name	Common Side Effects
ATYPICAL ANTIDEPRESSANTS		
Maprotiline	Ludiomil	Drowsiness, nausea, lethargy, anxiety, insomnia, nightmares, dry mouth, skin sensitivity, weight and/or appetite change
Trazodone	Desyrel	Drowsiness, dizziness, dry mouth, blurred vision, headache, nausea/vomiting
Mirtazapine	Remeron	Drowsiness, dizziness, seizures, mouth sores, dry mouth, sore throat, chills, fever, constipation, increased appetite, weight gain
Nefazodone		Drowsiness, dizziness, vision changes, clumsiness, light-headedness, itching, nightmares, agitation, confusion, constipation, diarrhea, dry mouth, flushing, headache, increased appetite, nausea, vomiting, edema, tremor, insomnia

Scientific studies have not yet compared the efficacy of the various antidepressants after blood levels of thyroid hormones have become normal with treatment. However, I typically use an SSRI first because side effects are less common with this class of antidepressants. The SSRIs have become the first choice to treat many forms of depression. These medications not only help with depression but can also be effective in obsessive-compulsive disorders. Even if you are not depressed but suffer from persistent emotional instability after correction of your thyroid imbalance, you will benefit from taking a small dose of an SSRI. The most troubling side effects of SSRI therapy are sexual dysfunction, weight gain, and sleep disturbances. Other side effects that will subside within two weeks are nausea and headaches. Nausea can be avoided by taking the medication with food. The most commonly used SSRIs include fluoxetine (Prozac), sertraline (Zoloft), and paroxetine (Paxil). However, in recent years, the newer SSRI escitalopram (Lexapro) has become quite popular. Escitalopram is the most selective of the selective serotonin reuptake inhibitors. It is more effective than the other SSRIs and its adverse effects are less common.¹⁶ Escitalopram also starts working faster than other antidepressants.¹⁷ If your depressive symptoms have completely resolved and you keep taking it, it will help prevent a recurrence of the depression.

Escitalopram is also effective in treating generalized anxiety disorder. One of the advantages of escitalopram is that it causes fewer sexual side effects than the other SSRIs. Research has shown that 68.1 percent of patients who suffer from a sexual dysfunction when treated with an SSRI have an improvement in their sexual function when switched to escitalopram.¹⁸

Paroxetine is unique among the SSRIs because it also works on nor-adrenaline. It is quite effective in treating panic attacks, but the long-term results are better if you continue treatment for at least a year. The drawback of paroxetine is that it causes weight gain, sexual dysfunction, and difficulty reaching an orgasm in women. Paroxetine can also cause gastrointestinal side effects, irritability, headaches, and eating and sleeping problems.

Serotonin-norepinephrine reuptake inhibitors are increasingly favored over the SSRIs to treat a wide range of symptoms. The current trend, in fact, is to use SNRIs as a first-line treatment for depression simply because they are more effective on both the mental and physical symptoms of depression, including pain. The class of serotonin-norepinephrine reuptake inhibitors includes venlafaxine, and duloxetine. These medications block the reuptake of both serotonin and norepinephrine. Research has shown that SNRIs are as effective as the SSRIs in treating anxiety disorders.¹⁹

Venlafaxine may work if one of the SSRIs has failed to give you the response expected. It might also work faster than the other antidepressants. Venlafaxine is certainly not my favorite antidepressant, as it causes adverse effects such as nausea, high blood pressure, sexual dysfunction, and withdrawal issues more often than duloxetine. You may experience withdrawal symptoms within hours of stopping or reducing the usual dose of venlafaxine. The problem is that this can affect your motor and coordination skills and cause you to have serious accidents. If you take venlafaxine, you need to adhere to a strict medication routine or not drive a car.

The newer extended-release form of venlafaxine (Effexor XR), recently made available, is more effective and safer than the standard form of the drug. It is quite effective in the treatment of anxiety disorders, including social anxiety disorder, generalized anxiety disorder, post-traumatic stress syndrome, panic disorder, and obsessive-compulsive disorder.

Duloxetine in general is tolerated better and does not cause cardiovascular adverse effects. At a dose of 60 milligrams a day, it is effective in the treatment of major depression. The side effects are by and large mild, with minor adverse effects comparable to the other antidepressants.²⁰ Duloxetine also helps with pain and is effective in treating panic disorders.

Bupropion is another popular antidepressant. It has recently received much media attention for its usefulness in helping people stop smoking. This antidepressant increases your energy but can promote agitation, anxiety, insomnia, headaches, and, rarely, seizures. If you have a history of seizing, do

not take bupropion. In August 2003, bupropion became available in the form of a once-daily extended-release medication, which makes it more practical to take than the older twice or three times daily dosing.²¹ Bupropion inhibits reuptake of norepinephrine and dopamine neurotransmission and does not affect serotonin. Bupropion is an effective long-term antidepressant. Among all the antidepressants, bupropion has the lowest incidence of sexual dysfunction, weight gain, and sleepiness. It can be used in conjunction with other antidepressants.

The two antidepressants that work on your adrenergic system are atomoxetine and reboxetine. Atomoxetine (Strattera) has an antidepressant activity and works on the neurotransmitter noradrenaline. Research in children, adolescents, and adults has shown that atomoxetine is safe and well tolerated for the treatment of attention deficit hyperactivity disorder.²²

Reboxetine is a selective noradrenaline reuptake inhibitor. It is an effective and safe form of treatment in patients with depression who have not responded to SSRIs.²³ Reboxetine is more effective at relieving anxiety, a symptom mediated by the noradrenergic system. Reboxetine also improves social adjustment. If you are treated with an SSRI and have not seen positive results, switching abruptly to reboxetine is usually well tolerated.

The atypical antidepressants are a group of medications that affect different combinations of neurotransmitters. In general, doctors turn to them if SSRIs are not effective. Trazodone and nefazodone are useful if the patient is suffering from insomnia. The insomnia can be effectively treated with doses smaller than the dose that would be needed to treat depression. A small dose of one of these two medications makes an SSRI work better.

Mirtazapine is a noradrenergic and specific serotonergic antidepressant. It works well on anxiety symptoms and helps you with your sleep disturbances. It also prevents sexual dysfunction that frequently occurs with the use of SSRIs. I have found no use for mirtazapine in thyroid patients. It has potent appetite-promoting effects and often causes weight gain. Other side effects of mirtazapine are sedation, dizziness, dry mouth, and constipation.

In case the SSRIs, SNRIs, or atypical antidepressants do not work or you have had an adverse reaction to them, the next course of action would be a tricyclic antidepressant, such as amitriptyline or nortriptyline. Tricyclics are effective in treating depression and controlling panic attacks. Amitriptyline is quite effective in acute post-traumatic stress syndrome. If you are suffering from agitation and loss of appetite, doxepin will help. If you are sleeping too much, desipramine will have a stimulating effect. The most common side effects of tricyclics are weight gain, sedation, dry mouth, sexual problems, constipation, sensitivity to the sun, urinary retention, blurry vision, heartbeat problems, and dizziness when you stand up or sit down.

Nowadays tricyclic antidepressants have largely fallen by the wayside because they may cause many side effects. I have found that tricyclic antidepressants are most useful for the patient who has problems sleeping at night (often a patient with Graves' disease) and lingering depression with significant anxiety symptoms. Tricyclic antidepressants can be used instead of SSRIs during pregnancy and in the postpartum period when a woman is breast-feeding.²⁴

Doctors now generally view monoamine oxidase inhibitors (MAOIs) as the last drugs to be considered for treating depression, although they can be helpful in atypical depression. Even though MAOIs are quite potent at alleviating depression, they are troublesome to work with, sometimes causing side effects such as sleep problems, high blood pressure, sexual problems, and weight gain. If you are taking an MAOI, you need to watch your diet and avoid eating many common foods, such as cheese and chocolate, that contain the chemical tyramine. The combination can trigger severe high blood pressure and other serious health problems.

Taking a monoamine oxidase inhibitor together with another antidepressant may cause "serotonin syndrome," characterized by agitation, diarrhea, involuntary muscle movements and muscle rigidity, trembling, high temperature, high blood pressure, and even seizures and coma.²⁵ Taking L-tryptophan or a tryptophan substitute in conjunction with an SSRI may lead to serotonin syndrome. Serotonin syndrome is due to very high serotonin activity in the brainstem and can be caused by the use of one or more serotonergic drug.

Lithium carbonate is a potent antidepressant used more commonly in bipolar disorders, especially manic-depression. For patients who do not respond to an SSRI or a tricyclic, some doctors add lithium to enhance the efficacy of the antidepressant. While taking lithium, you need to have your blood levels monitored to avoid toxic effects such as diabetes insipidus (which causes increased urination), high calcium levels, and kidney problems.

If in addition to depression you suffer from anxiety and insomnia, you should perhaps take medications that target these symptoms. This way, you will have a sense of well-being that will encourage you to continue the treatment. The SSRIs have become the medications of choice for anxiety disorders, though benzodiazepines, which work on the GABA system, are still widely used.²⁶ Because you may become addicted to benzodiazepines, you should use them only if an SSRI or SNRI has not cured your symptoms. You may, however, need a combination of an SSRI and a benzodiazepine, which is an effective and practical way of treating most anxiety disorders. The most commonly used benzodiazepines are Valium, Librium, Xanax, and Ativan. BuSpar, a nonbenzodiazepine antianxiety medication, is also quite effective.

Adverse effects of antianxiety medications include sedation and lack of coordination.

In general, once you are started on an antidepressant, the treatment is continued for at least six months and, if necessary, extended for up to one to two years. Depression can come back even if you are taking an antidepressant medication, including all of the ones I've discussed here.

Less than half of patients suffering from major depression have complete resolution of symptoms when they take an antidepressant.²⁷ If you have improved significantly but continue to have residual symptoms or if you feel that you have issues with social adjustment or you are not fully functional, you remain at risk for having a recurrence of full-blown depression in the future. For this reason, you may need to both address the psychosocial issues that could have perpetuated your depression and discuss with your doctor the option of changing the antidepressant that you are currently taking or adding another antidepressant. When you combine antidepressants, these medications have a higher chance of achieving full results if the medications work on different neurotransmitter systems. Improving the serotonin and noradrenergic systems will give you the most benefit. This will speed up the response and help you be depression-free in the long haul. Popular combinations prescribed by psychiatrists are an SSRI with bupropion, an SNRI with an SSRI, an SSRI with a tricyclic, and the triad of bupropion, venlafaxine, and mirtazapine.

Even if your symptoms of depression have resolved, you may continue to suffer from fatigue. Research has shown that three out of four depressed patients who have responded to antidepressant treatment continue to suffer from fatigue.²⁸ Fatigue is one of the most disturbing residual symptoms of depression. It has to do with an imbalance of serotonin in certain areas of the brain. This imbalance can be counteracted by a medication that enhances dopamine, such as bupropion. It can also be corrected by graded aerobic exercise. To improve the residual fatigue, you could use cognitive interventions. Modafinil (Provigil) has also been shown to be effective in improving residual fatigue. As your energy improves, so will your cognition.

Herbs and Supplements for Lingerings Symptoms

Tryptophan was used as a dietary supplement for a long time until it was banned in the United States in 1989 as a result of an outbreak of eosinophilia myalgia syndrome, which was related to the contamination of synthetic L-tryptophan from one manufacturer. It is now back on the market. L-tryptophan, which is a precursor for serotonin, has been marketed as

an antidepressant in several countries. Research has shown that L-tryptophan supplementation in women improves mood and emotion as serotonin antidepressants do.²⁹ You may get tryptophan from deoiled gourd seed. One gram of protein derived from deoiled gourd seed contains 22 milligrams of tryptophan.³⁰ If you suffer from insomnia, tryptophan will help you sleep better. After the removal of L-tryptophan from the market in the United States, 5-hydroxytryptophan became a quite popular supplement, and no toxicity has been reported.³¹ This supplement enhances serotonin in the brain and improves depression. It also promotes the secretion of melatonin.

You can also improve your anxiety symptoms and stress-related symptoms by taking the supplement glutamic acid, which regulates GABA. But too much of it can make you eat more, as mentioned in Chapter 7. Medications that enhance glutamic acid in the brain are useful to treat anxiety, obsessive-compulsive disorder, post-traumatic stress syndrome, generalized anxiety disorder, and social phobia.³²

Quercetin, which is one of the major flavonoids in fruits and vegetables, has a great antioxidant effect. Quercetin also helps protect brain cells from free radicals and is highly recommended in thyroid patients.³³

Rhodiola rosea, or rose root, is a plant used in traditional medical systems in Eastern Europe and Asia. It has an enhancing effect on the nervous system, decreases depression, enhances your energy, and improves work performance.³⁴ Researchers call it an adaptogen because of its ability to increase resistance to physical, chemical, and biological stress. It is claimed to help prevent cancer and to protect against heart disease. *Rhodiola rosea* increases your ability to concentrate and it enhances your mental and physical power. *Rhodiola rosea* affects the hypothalamic-pituitary-adrenal system, the system that plays an important role in the reaction of the body to stress.³⁵ This herb typically provokes no adverse effects, and if you use it for a long time you will not become addicted to it.

Spirulina (blue-green algae) too has antioxidant properties that will help your thyroid condition. Experimental research has shown that spirulina effectively treats certain allergies, hyperglycemia, and high cholesterol. It helps the immune system and reduces inflammation. A diet rich in spirulina has been shown to reduce the degenerative changes in the brain of animals as they age.³⁶

St. John's wort improves depressive symptoms and works well in thyroid patients with lingering symptoms of low-grade depression.

Although we know little about the various constituents of many herbal products and their potential beneficial or detrimental effects on the thyroid, you ought to be aware that there could be such effects. For instance, the popular culinary herb thyme contains an essential oil that may reduce thyroid

activity.³⁷ Thyme oil is found in mouthwashes and decongestants and used to treat tiredness, depression, digestion problems, and muscle aches and pains. A 1985 study of freeze-dried extracts of the common relaxant herb lemon balm (*Melissa officinalis*), which is used to treat viral infections, documented potential thyroid-related effects.³⁸ The extracts were shown to diminish the activity of thyroid-stimulating immunoglobulin, the antibody that causes overactive thyroid in Graves' disease.

More research is needed to determine which plant compounds affect the thyroid and whether plants might directly provide significant amounts of thyroid hormone, but in the meantime, if you are using herbs, do not abuse them. Many of their effects and side effects remain to be discovered.

The Persistent Cognitive Effects of Thyroid Imbalance

"I feel as if my brain aged by ten years," Cheryl told me during her first visit to my office. Cheryl, age forty-seven, suffered from an overactive thyroid that was undiagnosed for almost two years. After receiving radioactive iodine treatment, she became hypothyroid and was prescribed an adequate amount of thyroxine by her former endocrinologist. Although she maintained normal blood test results, she had continued to struggle with some impairment of her intellectual and cognitive abilities.

"My most significant problem," she went on to say, "is that I am unable to concentrate, even on trivial matters. It seems like I cannot process information and act on it as I used to. I forget words, or they elude me in a conversation. I would go into a room and not remember why I went in there. It would take me a few minutes, then I would sometimes remember."

A severe thyroid imbalance may cause a significant impairment in cognitive function, particularly memory and the ability to concentrate and to register and process incoming information. After the thyroid imbalance is corrected, these impairments often subside and treatment halts their progression. Some patients who experience a thyroid imbalance, however, continue to have a deficit in cognitive function after the thyroid condition is treated and corrected. The impairment of these functions may be more profound when the patient is afflicted at a young age.

In some patients, the cognitive deficit associated with prolonged and severe hypothyroidism may be more permanent with regard to memory and temporary with regard to general intelligence and concentration. Treatment also typically stops the progression of memory impairment, but if the thyroid hormone deficit remains untreated, cognitive impairment may worsen with time. Research has suggested that hypothyroidism could cause a direct and perhaps irreversible effect on brain structures, causing the memory impairment,³⁹ while other brain

functions that rely on adequate amounts of neurotransmitters may be restored to normal.

Occasionally, patients previously treated for an overactive thyroid experience significant residual intellectual difficulty that impairs their ability to work. Dr. Hans Perrild, studying neuropsychological function in patients with a previous history of hyperthyroidism, found among his patients four who were granted disability because of a significant reduction in their ability to perform any work.⁴⁰ One study showed that patients whose thyroid function had been restored to normal and who were in remission were found to experience impaired cognitive functions more frequently than normal and more frequently than before they got sick,⁴¹ even two and a half years after their last hyperthyroid episode. This suggests that people who are afflicted with hyperthyroidism that has lingered for some time may not be the same even ten years after correction of the imbalance.

Impairment in cognitive abilities due to hypothyroidism may range from minimal (detected only by standardized neuropsychological testing) to quite significant (noticeable to the person and close family or friends). In extreme cases, when brain structures are significantly affected by the thyroid hormone deficit, the impairment can even progress to dementia, particularly in older people.

How Thyroid Imbalance Causes Damage to the Brain: The Link with Aging

In a sense, Cheryl was correct to compare her suffering to an accelerated aging of her brain. As you get older, you become apt to suffer impaired cognition. You may have difficulty remembering names, keeping several things in mind at the same time, and processing information. You may have difficulty finding words, or you may slowly lose the ability to grasp details of what is going on around you.

Why do many people like Cheryl, after a severe thyroid imbalance, experience a deterioration of their cognitive abilities similar to what older people might experience over an extended period of time? Can untreated hypothyroidism lead to irreversible dementia? And does normal aging worsen the deterioration of your cognitive abilities if you experienced a long-lasting and significant thyroid imbalance? Recent advances in medical research in this field are revealing the answers to these questions. Research is also suggesting what we should do to improve intellectual faculties and prevent further age-related deterioration of the brain.

Thyroid imbalance of some duration can damage the brain in the same

way aging does. With increasing age, the brain becomes more subjected to the adverse effects of free radicals, the toxic oxygenated compounds released during metabolism. These radicals gradually damage major components of the brain, including myelin, a protective layer (composed of protein and fat) that surrounds some types of nerve fibers and increases the efficiency of nerve transmission. Myelin in the brain is sensitive to the damaging effects of free radicals and becomes damaged by the buildup of free radicals.⁴²

In patients with dementia, including Alzheimer's disease, homocysteine levels are high because of deficiency in antioxidants such as the essential polyunsaturated fatty acids, vitamin B₁₂, and folate. Homocysteine causes damage to the protective layer of cells in blood vessels and causes damage to the brain cells.⁴³

Once myelin has been damaged by free radicals, it becomes more vulnerable to further damage as we get older. Scientists now know that damage to myelin is one of the most important factors that accelerate the aging of the human brain.

Thyroid imbalance can increase your risk of impaired cognition as you become older because it has the same ability as aging to damage areas of the brain that are essential for normal cognition.⁴⁴ When your thyroid gland is overactive, oxygen consumption increases, and the number of free radicals overwhelms the cells' ability to clear them from the body. With aging, the machinery in cells that is designed to clear these "bad guys" becomes less efficient. In essence, the oxidative stress resulting from too much thyroid hormone causes damage to our brain similar to aging. Long-standing hypothyroidism also has a damaging effect on many brain structures simply because thyroid hormone is essential for maintaining healthy brain cells. In fact, the development of these brain structures in the critical period of rapid growth during the fetal stage and immediately following birth also depends on normal thyroid levels.⁴⁵ During this time, thyroid hormone is essential for adequate formation of myelin. This explains why infants with congenital hypothyroidism suffer severe neurological problems and mental impairment.

How to Prevent and Cure Residual Cognitive Impairment

When Cheryl came to me with impaired cognition after a significant thyroid imbalance, she was more frightened than most such patients. Her mother and maternal aunt had just been diagnosed with Alzheimer's disease. She had learned that Alzheimer's disease runs in families and that she could become a victim of this condition in the future. But the health program that Cheryl now follows—which includes a well-balanced diet, antioxidant supplementation, hormone treatment, and control of her blood pressure—not only helped her

recover from some of the cognitive deficits she endured but also will slow down the anticipated deterioration brought on by aging. Furthermore, it will help prevent Alzheimer's disease or slow it down if she becomes afflicted by it.

All of us should practice preventive measures to preserve a healthy, functioning brain and try to prevent the decline in cognitive abilities that occurs with aging. But if you have experienced a significant imbalance that left some residual deficits, you need to be more vigilant.

If you are predisposed to Alzheimer's disease or have a medical condition that could cause damage to your brain, a prolonged deprivation of thyroid hormone may accelerate dementia. Even if the damage caused by hypothyroidism is not severe, it may represent a setback. It will make you more vulnerable to developing dementia later in life. Long-standing depression and stress also cause deterioration of cognition.

Several measures are now recognized to help prevent further deterioration of brain function. The first step is to pay more attention to the many lifestyle factors that can affect your brain function. Supplementing your diet with adequate amounts of antioxidants and omega-3 fatty acids is one of the most important measures. Vitamin C, zinc, and vitamin E could prevent the damage and loss of brain cells due to the buildup of free radicals. Also, take small amounts of glutamic acid, which has beneficial effects on your brain functions. Be aware, however, that high amounts of glutamic acid can have detrimental effects on your appetite center. Phosphatidylserine, a phospholipid, improves the communication between brain cells. It is a safe supplement that improves cognitive function.⁴⁶ You can safely take 400 mg a day in divided doses. Phosphatidylserine comes from several sources, including soy foods. (See Chapter 19 for more on antioxidants.)

You also need to reduce your risk of cerebrovascular disease and strokes, which are known to accelerate the dementia process. Atherosclerosis, or hardening of the arteries, typically increases with age. When this process affects the arteries in the brain, it can lead to poor blood supply, strokes, and ultimately loss of brain cells. Hardening of the arteries of the brain is a major factor in impairment of cognition and even dementia in older persons. Researchers have found that more than 50 percent of patients older than eighty-five had hardening of the arteries in the brain.⁴⁷ It is likely that many people with dementia, including those with Alzheimer's disease, have atherosclerosis as a contributing factor to their dementia.

If you have experienced a severe thyroid imbalance, you should control the vascular risks that could predispose you to hardening of the arteries and poor blood supply to the brain. To achieve this, you need to exercise and take antioxidant multivitamin supplements containing folate and vitamins B₆ and B₁₂. Controlling your blood pressure is essential. High blood pressure can

damage blood vessels of the brain, heart, and kidneys. The longer your blood pressure stays high, the more damage it can cause. One study showed that patients already suffering from vascular dementia who received a treatment that lowered their systolic blood pressure to the 135–150 mm Hg range experienced either an improvement in their cognitive deficit or a delay in the worsening of their dementia.⁴⁸ Research has recently linked cardiovascular risk to accumulation of the amino acid homocysteine.⁴⁹ The B-complex vitamins just mentioned will help reduce the accumulation of homocysteine and lower your risk of having low brain blood flow.

You also need to lower your cholesterol and triglycerides by diet and medication if necessary. High LDL (bad) cholesterol is an important risk factor for cardiovascular disease in both men and women. Raise your HDL (good) cholesterol to more than 60 milligrams per deciliter by eating less fat and less cholesterol and by exercising. Lower your triglycerides by eating less sugar. Avoid alcohol if you have high triglyceride levels. Do not lower your cholesterol too much, however. Very low cholesterol can reduce brain serotonin, thereby causing depression and aggressive behavior. It can damage brain cells and cause impaired cognition as well. Try to keep your total cholesterol less than 200 milligrams per deciliter for the vascular benefit. However, do not have your cholesterol lowered excessively to avoid low mood and impaired cognition.

Several common health problems can act alone or in concert with others to precipitate or contribute to the development of cardiovascular disease (see the following list). Long-standing untreated hypothyroidism is one of these factors. Hypothyroidism can raise blood pressure, increase LDL cholesterol and even triglycerides, and lead to excess weight and thus a sedentary lifestyle. Even low-grade hypothyroidism has recently been shown to elevate LDL cholesterol. In Great Britain in the early 1970s, research already showed that people with Hashimoto's thyroiditis had a higher rate of cardiovascular disease even after exclusion of other risk factors, such as weight, high blood pressure, and high cholesterol.⁵⁰ Because of the high frequency of low-grade hypothyroidism in menopausal women, and its effects on cholesterol, it is likely that long-standing low-grade hypothyroidism contributes to the occurrence of coronary artery disease among these women.

RISK FACTORS FOR CARDIOVASCULAR DISEASE

- High blood pressure
- High blood levels of cholesterol and triglycerides
- Smoking
- Diabetes
- Long-standing hypothyroidism
- Excess weight

- History of heart disease in other family members
- Sedentary lifestyle
- Metabolic syndrome
- High insulin/insulin resistance
- Menopause

For people who suffer from a thyroid imbalance and possible damages from its consequences, it is essential to pay serious attention to the other additive risk factors.

High insulin levels can result from eating too much refined sugar and from developing insulin resistance. This occurs in people who are capable of producing insulin but whose organs do not respond well to insulin, causing the hormone to work less efficiently. High insulin levels increase the vascular risk. They also promote the retention of salt in the body and cause narrowing of the arteries in organs. Because insulin does not work efficiently, patients with metabolic syndrome and insulin resistance have a tendency to develop diabetes; they also have hypertension and high fat levels in their bloodstream. The key here is to lose weight and to lower sugar intake. A healthy, well-balanced diet is low in animal fat, dairy fat, and refined sugar. Avoid too much butter, whole milk, and eggs. Always include fish, fresh vegetables and fruits, legumes, whole grains, and beans in your diet. Vegetable oils such as olive, sunflower, and safflower should always be included in your diet.

The Mental Benefits of Estrogens

Serotonin is one of the brain chemicals that regulates mood and emotion. It also interacts with physiological functions, much like a hormone does. In women, constantly changing estrogen levels during the menstrual cycle cause serotonin levels to change as well. This explains how changes in estrogen levels can cause headaches, dizziness, and nausea, which are known to be effects of serotonin. Estrogens also combine with serotonin to affect bone density, vascular functions, and even the way the immune system works.⁵¹

In Chapter 11, I discussed the benefits of hormone replacement therapy in menopausal women and some of the controversies pertaining to the risks associated with the use of estrogen-progesterone treatment after menopause. Not as widely publicized, however, are estrogen's beneficial effects on mood and cognition. Scientific evidence for the use of estrogen not only to prevent impaired cognition but also to prevent and treat dementia is expanding. The loss of estrogen that occurs at menopause could be an important factor in the brain damage of Alzheimer's disease. Research suggests that estrogen has a protective effect in relation to Alzheimer's disease, reducing the risk by 29–44 percent.⁵² Estrogens minimize the decline of cognitive functions,

including the memory loss that tends to occur with aging. This has been shown only in younger postmenopausal women; however, if you are sixty-five or older, estrogens may promote dementia, according to the Women's Health Initiative Memory Study.⁵³

Lack of estrogen after menopause is perhaps one of the reasons why dementia affects two to three times more women than men. Estrogen replacement improves several cognitive abilities of postmenopausal women not suffering from dementia—in particular, skills pertaining to verbal memory.⁵⁴ Estrogens stimulate brain cells to produce more of the neurotransmitter acetylcholine, which plays an important role in memory and cognition. Blood flow tends to decline after menopause, and estrogen replacement increases the blood flow in certain regions of the brain responsible for cognitive abilities. Estrogen treatment in postmenopausal women has a tempering effect on stress. A woman who takes estrogen produces less cortisol in response to stress and is therefore subjected to fewer of the deleterious effects of cortisol on brain cells and memory. During menopause, the effect of stress on the activation of your autonomic nervous system becomes more significant and bothersome, and estrogen attenuates the physical symptoms that occur as a result of the response of your autonomic nervous system.

Perimenopause is undoubtedly a transition period when you become at greater risk for depression. As you are becoming menopausal, your brain neurotransmitters change and will make you more vulnerable to depression and also to symptoms of menopause. If your depression is minor, estrogen may be all it takes to treat your depressive symptoms.⁵⁵ Research has shown that in menopausal women suffering from depression, the use of transdermal estrogen in conjunction with an antidepressant makes the antidepressant work much faster and more effectively.⁵⁶

In young postmenopausal women, estrogen reduces anxiety and depression. It does so by increasing serotonin levels. Women who suffer from even minute thyroid hormone deficits in brain cells risk a worsening of depression by not taking estrogen. The lingering effects of thyroid imbalance in postmenopausal women may not go away unless your doctor implements a well-balanced sex hormone regimen. Thyroid hormone treatment by itself may not resolve the depression. Only when estrogens are added is the depression improved. In some women, adding a small amount of testosterone helps to improve both cognition and mood.⁵⁷

The Circle of Wellness

The "Circle of Wellness" that I provide to my patients is a model that anyone can use to minimize cognitive deterioration with aging and to achieve and maintain optimal physical and mental wellness (see the accompanying illustration).

Patients suffering from thyroid imbalance should recognize the importance of early diagnosis to minimize any permanent residual damage to cognition. They should also make sure their thyroid remains in balance throughout their lives. Even that may not be enough. If a significant blow to the brain has occurred as a result of the imbalance, people should do everything they can to minimize other deleterious effects on the brain.

CIRCLE OF WELLNESS FOR THYROID PATIENTS

Start:

Get diagnosed early.



For postmenopausal women, take estrogen replacement therapy to:

- Improve cognition
- Prevent dementia
- Improve mood

Avoid too much or too little iodine, which causes changes in thyroid function.

Take antioxidants and essential free fatty acids to:

- Help thyroid hormone work efficiently
- Protect yourself from age-related brain damage
- Protect your thyroid from autoimmune reactions and damage
- Speed up your metabolism

Control blood pressure: high blood pressure causes vascular disease and accelerates cognitive impairment.

Control cholesterol levels:

- High cholesterol causes vascular disease.
- Too-low cholesterol impairs cognition and causes depression, suicide, and violence.

Correct the imbalance promptly: avoid a treatment roller coaster.

Maintain thyroid balance:
TSH = 0.5–2 milli-international units per liter

Avoid lingering depression and stress through:

- Stress management
- T4/T3 protocol
- Course of antidepressant if needed
- Counseling and psychotherapy

Get support and understanding:

- From family
- From friends
- At work

Control weight through:

- Mindful exercise
 - Low-fat/high-protein, serotonin-enhancing diet (low in simple sugars [galactose and fructose], high in complex carbohydrates)
-

What some of my patients like Cheryl now know is that they need to take steps to preserve healthy brain structures as much as possible for the years to come. By failing to do so, they will place themselves at a much higher risk for further deterioration of their cognitive ability and possibly even dementia.

It is crucial for people afflicted with a thyroid condition to understand that the more a thyroid imbalance alters brain function, the greater their chances of having some residual effects, such as not feeling as well as before. Fight these residual effects using mind-body medicine that can help you alleviate some of the emotional effects.

Important Points to Remember

- If you've been successfully treated for a thyroid imbalance but have continued to be emotional, moody, tired, or exhausted, or have continued to have achy feelings throughout your body or other symptoms of an underactive thyroid, you are not alone! It is just the aftermath of the effects of the imbalance on your brain chemistry. Some of your symptoms can be explained by a deficit of T3 (the most active form of thyroid hormone) not provided by the synthetic T4 used for the treatment of hypothyroidism.
- To fight these symptoms, use mind-body techniques and aerobic exercise, maintain thyroid balance, and if necessary, use T4/T3 combination treatment and an antidepressant.
- The damaging effects of a severe thyroid imbalance on your brain may lead to impaired cognition and memory problems that resemble the effects of aging. You need to pay attention to your lifestyle, take antioxidants, lower your cholesterol, control your blood pressure, and avoid simple sugars.
- Pay attention to sex hormones if you are postmenopausal, and consider small amounts of androgens to improve your mood and cognition. You need progesterone if you have a uterus.

THE NEW T4/T3 PROTOCOL

"It Made Me Feel Better All Over"

A few years ago, I was invited to a Christmas party at the home of a friend. Although I had known Alan for several years, I had never met his wife, Jennifer. When I arrived at the party, I noticed immediately that Jennifer had bulgy eyes, a symptom of the overactive thyroid condition Graves' disease. Not only did her eyes protrude, but she also appeared depressed and withdrawn. She didn't mingle easily and often snapped at her husband throughout the evening, clearly quite unhappy that she had to be at this party.

Later, I learned from Alan that Jennifer had been diagnosed with Graves' disease two years earlier. What had driven her to seek a doctor's help were her anger, extreme anxiety, and wild mood swings, which were taking a toll on their marriage.

Alan also explained that her emotional problems hadn't completely disappeared after her thyroid condition was treated. In fact, she never went back to "being herself." As a result of the treatment of her overactive thyroid, Jennifer had become hypothyroid and was receiving thyroid hormone treatment in the form of synthetic thyroxine (T4). Several physicians told her that her thyroid hormone levels were normal and there was nothing more they could do for her. One even suggested that she go see a counselor. Jennifer did take a course of an antidepressant but stopped the medication after three months, when she realized that it had produced no significant improvement in the way she felt.

Later, when I took over Jennifer's care, she gradually returned to normal through an innovative treatment program that corrected the brain chemistry imbalance resulting from her thyroid condition. The program included the practice of a relaxation technique, but more important, it involved a dramatic change in the nature of her thyroid hormone treatment, from the use of a T4-only drug to a protocol I've devised that combines synthetic T4 (levothyrox-

ine) and T3, the most potent and biologically active form of thyroid hormone. I believe that this protocol holds tremendous promise for a large number of people who, for whatever reason, are suffering from an underactive thyroid and need thyroid hormone treatment. I regard this new T4/T3 treatment as a state-of-the-art treatment for hypothyroidism and a viable alternative to the most widely accepted current medical approach, which has been to prescribe T4, a portion of which is then converted to T3 by bodily organs, including the brain.¹

"I think that there are a lot of women like me," Jennifer told me, "who have to deal with the problems I faced every day without ever realizing that an effective treatment exists. And that's too bad, because thyroid conditions can totally alter not only your personality but your physical appearance, and Lord knows that's a tough burden to bear in today's society."

Lifting the Cloud

It was quite obvious from the symptoms Jennifer described that while suffering from a glandular disorder, she had gone through an unpleasant journey of disturbed mood and emotions that were never validated for her. Jennifer told me recently:

Before I started on the new T4/T3 treatment, I was constantly wondering, Is this what it's going to be like for the rest of my life?

Since then, the cloud has lifted. I'm once again able to process things in my mind normally and quickly. I have had, I would say, a 95 percent improvement in my symptoms. The tingling in my hands and feet is not as bad. I retain water less than before. I have more energy. I've gone back to work. I'm more outgoing and have a brighter outlook. I'm finally reclaiming myself. I really feel good, and I have hope!

When I began my career in the field of thyroid disease, my goal in treating patients with an underactive thyroid was to help them reach and maintain normal blood levels of thyroid hormones and TSH, the pituitary hormone that regulates thyroid gland function. I still remember those days when I faced countless patients who had achieved this goal but who nevertheless continued to complain of tiredness, dry skin, an inability to function, and other symptoms. I would vehemently reply to their complaints, "These problems are not from your thyroid." Although I was puzzled by these persistent symptoms, I felt in a way that I had accomplished my job. More often than not, when I searched for coexistent conditions, my efforts were in vain. My frustration continued to build, and I felt ineffective at providing the answers and cures that many of my hypothyroid patients were expecting of me.

In those early days, doctors began to be concerned about bone loss and osteoporosis in people being treated with too much thyroid hormone. Early treatments used desiccated animal thyroid. It is natural and provides both thyroid hormones (T4 and T3), but not in a composition close enough to the human chemicals to achieve stable levels.² The result was often daily surges of blood levels of T3 out of proportion to the normal pattern of human blood levels. Such patients were also at risk for significant bone loss. As many physicians did at the time, I switched to the newest treatment for hypothyroidism whenever possible: I took these patients off the desiccated thyroid and put them on synthetic T4.

Surprisingly to me, this was seldom entirely successful. Once switched from these natural T4/T3 tablets to T4 tablets, patients complained of sluggishness, decreased memory, impaired concentration, and a host of other symptoms. This was in spite of having reached normal blood levels of thyroid hormone and TSH. In fact, seldom was I able to convince a patient to remain on levothyroxine: they all wanted to go back on the old pill.

Because of these observations, I quickly came to realize that there must be a role for some form of T4/T3 combination therapy in many patients with underactive thyroid. Isn't this the reason why many doctors continue to prescribe desiccated thyroid to their hypothyroid patients? Isn't this the reason why synthetic combinations of T4 and T3 such as Thyrolar have been manufactured for years? These combinations, however, have seldom been used since the 1970s, primarily because they also result in abnormal surges of T3 levels in the bloodstream. What levothyroxine-treated patients were missing was some T3, in the right amount and close to how the human gland produces it.

Adding T3 in the treatment of hypothyroidism is beneficial because the body and mind depend on this most potent form of thyroid hormone, which is also the main form of the hormone that works in brain cells. Therefore, even a minute T3 deficit, which may be present in many patients taking levothyroxine as a thyroid hormone replacement, may impair a person's functioning. It is also true, however, that one person missing a minute amount of T3 may be symptom-free, whereas another person may experience some effects.

Though pharmaceutical companies have tried to combine the two hormones, the results have not duplicated nature. In humans, 20 percent of T3 needed by the body is produced directly by the thyroid gland. The correct replacement is usually judged by monitoring what the pituitary senses and releases (TSH). But as we come to a better understanding of the complex chemistry and regulation of thyroid hormones in the body, we realize that these regulations in the pituitary gland, the brain, and other organs are somewhat different. The assumption was that by giving only T4, doctors could normalize thyroid hormone levels in the body. This turns out not to be true in all cases. By

giving patients only T4 to normalize TSH, some still miss a small amount of T3 that is normally provided by the thyroid gland. It is possible that even though blood test results are normal and the conversion of T4 to T3 within organs is taken into account, some form of brain or perhaps even “general body” hypothyroidism, due to lack of T3, still exists. Having a normal TSH level does not necessarily mean that your brain and organs are receiving exactly the amount of T3 needed. Obviously, understanding what is missing in the brains and bodies of my hypothyroid patients became a prime concern.

I knew that T3 works as an antidepressant but that the doses used conventionally by psychiatrists were far higher than the physiological replacement doses (see Chapter 6). I also knew that the persistent suffering of treated hypothyroid patients is often of two kinds. Many people continue to suffer from symptoms of low metabolism. They have difficulty losing weight, and they complain of hair loss, dry skin, brittle nails, muscle cramps, and a host of physical symptoms. These symptoms indicate that the body is not receiving exactly the right amount of T3 from the conversion of T4. Many people suffer from some degree of depression, also probably due to some extent to low T3 in the brain. Some of the lingering effects of thyroid imbalance, discussed in the previous chapter, may be related to minor deficits of T3 in the brain.

This line of thinking brought all patients who required T4 treatment under the same umbrella, even those who had Graves’ disease like Jennifer and those who had their thyroid gland surgically removed because of another thyroid disorder. The purpose of the treatment is to duplicate very closely how much T3 the brain and body require for normal functioning.

When T4 Simply Does Not Do It

Whether your underactive thyroid has been caused by Hashimoto’s thyroiditis, as a result of the treatment of Graves’ disease, or as a result of surgical removal of the gland, you may continue to suffer from symptoms of low thyroid if you have been prescribed T4 only for your condition. Research conducted in Norway showed that patients treated with T4 alone continued to have lower quality of life, depression, anxiety, and short memory.³ Even though the patients improved with T4-only treatment, they did not necessarily feel as well as before they became hypothyroid, even after six to eight months of treatment. As I indicated in Chapter 17, recent research has also confirmed that patients with Graves’ disease continue to have significant mood, emotional, and cognitive symptoms, even years after the treatment of the overactive thyroid, and despite having normal thyroid tests with thyroxine treatment. You may have a TSH in the optimal range but your T3 level remains on the low side. One study compared 85 patients treated with T4 only

to 114 normal people who had similar TSH levels and found that T3 levels were much lower in the patients treated with T4.⁴ In this research, the patients who were treated with T4 had biological evidence of hypothyroidism demonstrated by low levels of sex-hormone-binding globulin (a protein produced by the liver that reflects thyroid hormone effects in the body). Research performed with rats who were made hypothyroid by surgical removal of their thyroid glands has shown that to restore normal T3 levels in the tissues of the animals, the animals needed excessive amounts of T4.⁵ All this body of evidence clearly shows you that in many patients with underactive thyroid, T4 alone is not adequate to reach and maintain perfect T3 levels in their blood and in their organs.

A teacher named Priscilla taught me the extent to which her cognitive impairment and symptoms were the result of the small amounts of T3 that she was missing. Her experiences illustrate the fact that administering thyroxine to replace what a normal gland produces and delivers to the brain and body does not duplicate nature. The conversion of synthetic T4 to T3 simply does not yield the T3 needed even when the pituitary TSH has become normal.

Priscilla had a complete thyroidectomy for a large goiter. She was given T4 for her hypothyroidism and reached normal blood levels of thyroid hormones and TSH. Prior to the thyroidectomy, Priscilla had had no symptoms. She had been happy and energetic, but her problems started weeks after the surgery. In her words:

I just couldn't seem to get the correct dosage. One doctor thought I was going through depression. He never really could get the dose straightened out either. I couldn't seem to get well. The doctors told me that everything was normal, although I certainly didn't feel normal. I was losing hair, I was nervous, I wanted to do destructive things. I thought I was crazy.

It was an effort even to drive to a doctor's appointment. Unless I had the directions written down, I couldn't remember how to get there. Or I didn't feel like I could do it unless my husband came along, and I had been very independent before then. I became very scattered and couldn't stay focused on anything. Even in the house, it would be difficult to decide on which things to throw away and which things to keep. Everything would just seem to be a big mess. I was very disorganized.

I had been teaching for twenty-five years, but it got to the point where I couldn't remember where I put files, and I couldn't remember what it was I wanted to do next. I'd become annoyed or upset with colleagues and just explode at times.

After removal of her thyroid gland, Priscilla's doctor gave her the exact amount of T4 needed to achieve a normal TSH level. But despite normal

blood tests, she was missing a small amount of the active form of the hormone T3. As with low serotonin in the brain, this triggered depression, which became self-perpetuating.

The small deficit in T3 had caused Priscilla's dry skin, puffiness, and low metabolism. When I changed her T4 treatment to T4/T3 combination regimen, her emotional and physical symptoms rapidly resolved. Whereas most antidepressants take six to eight weeks to become effective, many people begin to notice an improvement in the way they feel as soon as one week after starting the T4/T3 treatment. Priscilla described the improvement in her symptoms as follows:

On the combination treatment, I was better able to handle situations. I could once again deal with children and colleagues at school. My emotions became more stable. I have been able to face challenges in life, and I've been able to challenge myself—taking classes, for example. I've noticed a big difference in how I feel about myself, how I dress and do my makeup—things I was letting go because it was such an effort. I enjoy exercising again and want to do extra activities and go places.

Before T3, I felt like I was outside of myself, sometimes even just watching what's going on and not being able to figure out why I couldn't be part of it. I feel like this new treatment has put me back in touch with me, a person who's creative and energetic—the person I was before. I have a lot more self-esteem and self-control.

Priscilla's case illustrates that part of the problem when people rely on the T4 pill to obtain normal amounts of T3 in their body and brain is that the T4 pill simply does not provide the correct amount of T3 needed for normal functioning.

You Need the Right Combination

While searching for the right amounts of T3 to be combined with T4 for my patients, I realized early on that each person needs a different amount, which depends not only on the total amount of thyroid hormone required by that particular patient but also on the patient's symptoms and on whether he or she has depression, anxiety, and/or residual physical symptoms. Some patients require between 5 and 10 micrograms of T3 a day to achieve the best symptom relief. Other patients, however, may require as little as 2 or 3 micrograms a day. There is no magic amount of T3 that will work for all people. The amount of T3 needed should be quite close to the amount that a normal thyroid gland produces each day. But if you are suffering from symptoms of depression, the amount of T3 may need to be slightly higher without causing you to have excessive levels of T3 in your system. In essence, your doctor

needs to find the ratio of T3 to T4 that will make you feel at your best without causing undue adverse effects. T3 in the right amount and in the right ratio can provide you with miraculous changes in the way you feel, but too much T3 not only will make you not benefit from the treatment but also can generate other symptoms, such as worsening anxiety, worsening depression and fatigue, rapid heartbeat, and palpitations. The T3 is best taken twice a day (before breakfast and at 2:00 P.M.) to avoid abnormal surges in T3 levels. You can get the T3 by taking a combination of low doses of desiccated thyroid (such as Armour Thyroid) or low doses of Thyrolar (a combination of synthetic T4 and T3), in addition to an appropriate amount of synthetic thyroxine if needed. But again, this may or may not work in your particular case. You can also get the T3 from the synthetic T3 Cytomel, which comes in 5-microgram tablets. Because T3 levels typically rise and fall within a few hours of taking Cytomel, many patients need to take half of the daily dose twice a day.

Another alternative that I have found quite effective and safe is the use of compounded slow-release T3 to be taken once a day along with T4 half an hour to forty-five minutes before breakfast on an empty stomach. When you take compounded slow-release T3, you will not experience major surges of T3 in your system, and your T3 levels will be steady and in a very good range for more extended periods of time during the day than if you took the short-acting synthetic T3.⁶ Some patients, however, will benefit better from taking the slow-release T3 twice a day.

Whatever combination treatment your doctor has chosen for you, you need to make sure that both thyroid hormone and TSH levels remain normal and stable. Treating persistent sufferers with T4/T3 combination mimics closely what a normal thyroid gland provides to the body and the brain. You need to monitor your TSH level, and your T3 should be measured two to three hours after you take your morning dose of thyroid hormone to make sure you are not overmedicated with T3.

The release of the first edition of *The Thyroid Solution*, where I detailed the benefits of T4/T3 combination in the treatment of hypothyroid patients with residual symptoms, coincided with the publication of the first research showing that Cytomel in conjunction with T4 does improve mood and cognition in hypothyroid patients.⁷ Even though the design of this research was not perfect, I was excited to see the results of this study. Since then, however, approximately ten research studies have appeared in medical journals evaluating the effect of T4/T3 combination treatment in patients with hypothyroidism, and several of them have failed to demonstrate any benefits.⁸ For this reason, a large number of doctors continue not to accept that T4/T3 can help a great number of hypothyroid patients suffering from residual low

mood and fatigue despite having normal blood tests on T4 alone. In my opinion, however, no research so far has been conducted adequately enough to provide evidence that the T4/T3 combination is not beneficial for patients with lingering symptoms. The quality of the published research is so poor that it should not have been published to start with. Most of the studies suffered from a wide range of flaws in their design. The number of patients was in general too small, and the selection of patients studied was often inappropriate. As I explained earlier, not all patients with underactive thyroid have residual symptoms of low mood and fatigue, yet the patients included in research were not selected to evaluate these residual effects. The other major problem with the published research has to do with the dose of T3 used. Most studies used a fixed amount of T3 for all patients irrespective of the total amount of thyroid hormone needed and irrespective of their symptoms. As mentioned earlier, T3 in the right amount and right proportion works, but too much of it not only will not relieve symptoms but can bring on new symptoms and even adverse effects. Also, in the published research, when patients were switched from T4-only treatment to T4/T3 treatment, their thyroid status might have been slightly changed, which could have affected results of the research.

Clearly authorities in the thyroid field who teach doctors about ways of treating thyroid disease need to conduct very thorough and meticulous research before reaching the verdict that this treatment has no benefits.

"I Feel Beautiful Again"

Erin, a forty-four-year-old woman, had been diagnosed with hypothyroidism five years previously and had also had a hysterectomy. Despite numerous adjustments of her T4 dose, she did not feel as good as she would have liked. Her symptoms had progressed, and three years ago she got to a point at which she could no longer function. Because she continued to suffer from tiredness, trouble concentrating, and a host of other symptoms, her physician kept increasing the dose of thyroid hormone to make her feel better. Erin had no energy and had tingling in her hands that the doctors could not explain. She said:

One doctor kept telling me that there wasn't anything wrong. He would tell me that I was fine, I think because he really didn't know what to do. I got to the point where I thought there was something terribly wrong with me, although I had no idea what it was. I could feel that my body and my mind were not functioning properly for my age.

At one time, the doctor said I was hypoglycemic and put me on six little meals a day. It still didn't improve the way I felt.

Like most patients suffering from the lingering effects of a thyroid imbalance, Erin did not even suspect she might be depressed. But when I asked Erin about her symptoms, she confessed that she had most of the symptoms of depression. She was very irritable. "I went through a period where people would ask me a simple question, like 'Do you like my new haircut?' Instead of politely saying they looked nice whether they did or not, I would say something like, 'You know, it doesn't suit your face shape,' or 'It's horrible and makes you look bad.' Then I would be embarrassed at what had come out of my mouth."

Erin no longer suffers from depression or anger. Her physical symptoms have resolved since she started taking the right amount of T3 in combination with T4. It took two adjustments in the amount of T3 that she needed to feel at her best. She said:

Now I'm happier and more stable. I feel like I have a life again. I have more energy. I am not angry. I don't think I'm depressed at all. I'm able to do stuff for other people that for a long time I couldn't do. For a while, I couldn't give of myself, and now I'm much more involved in my church and in social activities.

As far as my relationship with my husband, he loves this change because I'm back to being my normal self again. I greet him with a smile and want to know about his day. Before, I wasn't able to do even that. I think I was so wrapped up in my own problems that I couldn't think about him. Now, we are back to where we sit down and we have our talks and spend time together.

At work, I'm more able not to be angry when the telephone rings at the wrong time or things don't work out as planned. I don't get as frustrated as I did.

As a result of this protocol, Erin lost ten pounds when she first started. Her skin felt better, and she stopped losing hair. The swelling around her face and her bloated look went away. "When I look in the mirror," she says, "I feel beautiful again. This treatment totally revolutionized my life."

Switching from the Natural Hormone to the T4/T3 Protocol

Some patients with an underactive thyroid are treated with high doses of desiccated Armour Thyroid taken as a single daily dose. These patients go through periods of high T3 levels in the brain for a long time and typically experience a withdrawal syndrome once the desiccated thyroid is stopped and replaced by levothyroxine. In such patients, if one uses the

combination of levothyroxine and T3, as explained before, symptoms of brain hypothyroidism—including tiredness, exhaustion, and depression—often resolve. This approach has allowed me to successfully switch many patients from desiccated thyroid to a more physiological regimen combining the right amounts of T4 and T3.

A few patients either have refused to be switched or have tried my protocol for a few weeks and then asked to go back to the desiccated thyroid. Some of these people strongly believe that the natural hormones are better than the synthetic ones. In such patients, quite often relief of symptoms is achieved at the expense of having a low TSH level and a significant rise of T3 levels for several hours after taking the pill. This rise in T3 causes a mental boost in many patients but can also produce heart problems and bone loss. These patients need to understand that it takes time for their system to adjust to the switching from abnormally high thyroid hormone levels to the new physiological regimen.

- The T4/T3 Protocol for Fibromyalgia

T4/T3 treatment is clearly the best thyroid hormone treatment for patients who suffer from fibromyalgia caused by an underactive thyroid (“hypothyroid fibromyalgia”).

As I explained in Chapter 10, people suffering from euthyroid fibromyalgia have a problem with thyroid hormone not working efficiently. They may not be producing enough T3 in their organs. For this reason, the ideal treatment for patients with an underactive thyroid who also have fibromyalgia should include T3. In fact, the only way I can achieve normal tissue thyroid hormone levels in patients with hypothyroid fibromyalgia is to use a T4/T3 combination therapy.

Michelle was one of the many patients who suffered from fibromyalgia that I successfully treated with T4/T3 combination therapy. She was thirty-seven years old when she started feeling tired and noticing hair loss and brittle nails. She gained weight and was feeling sleepy. Gradually, she began suffering from pains in her shoulders, the middle of her back, and her arms. She eventually started going to doctors when her symptoms worsened.

Michelle actually suggested the diagnosis of hypothyroid fibromyalgia to one of the physicians. She said, “I was reading and trying to find out some information on why I felt so tired and was experiencing all those other symptoms. I knew about thyroid problems, so I started investigating them more, and that’s when I decided to go to an endocrinologist.”

For four years after Michelle was diagnosed with an underactive thyroid, she continued to suffer from many symptoms that clearly indicated fibromyalgia,

despite receiving an adequate dose of thyroxine. Here's how she described these symptoms:

The pain in my shoulders at the top and right in the middle of my back was severe enough to wake me up in the middle of the night. I couldn't sleep because my joints hurt all the time. I was taking eight Advil a day, and they didn't help. I was exercising, which only seemed to make it worse. Sometimes the pain would shoot down my back, and I'd have tingling in my fingers, and sometimes it would come down my arm or up my neck.

I had a friend who thought it was arthritis, and that's when I went to a series of specialists. After three years of going to them, one doctor told me I had back problems. He gave me a neck brace, and I received physical therapy three times a week for three weeks, and that didn't do any good. Another doctor told me that I probably had bruised some muscles in my back due to stress. One doctor told me that it was probably marital problems and stress.

Finally, I went to another doctor, who, within five minutes, was touching the tender points in my back and my shoulders and took some X-rays and diagnosed me with fibromyalgia.

When I saw Michelle, she was taking L-thyroxine for her underactive thyroid. Instead, I prescribed a T4/T3 combination treatment using small doses of T3 given three times a day. Not only did the lingering symptoms disappear, but her fibromyalgia also improved dramatically. Michelle also started practicing a relaxation technique and receiving massage therapy. Michelle said:

They were remarkable changes. When I was just being treated with the T4 for my thyroid, I got to the point where I could hardly drag myself out of bed, and I really didn't want to be social anymore. Within a few weeks of starting on the T4/T3 protocol, I began to recognize a remarkable difference in the way I felt. I no longer wanted to sleep twenty-four hours a day. I could get up and function like a normal person. I no longer suffered from joint pain and body aches. That was exciting to me because I had felt so bad for so many years, I didn't think I would ever feel good again.

Michelle had suffered from hypothyroid fibromyalgia. Even in patients with fibromyalgia who have normal thyroid tests and have not experienced an underactive thyroid, this treatment may be beneficial. Remember, part of the problem may be an inefficiency of thyroid hormone. The body and brain need plenty of T3 to overcome this inefficiency. Administering T3 in appropriate amounts will not result in thyroid hormone excess and will provide more consistent and stable levels of T3 throughout the day.

T4/T3 in Conjunction with Antidepressants

Thyroid hormone pharmacotherapy may help many people suffering from depression who have a brain deficit of T3 not completely corrected by Prozac and the other selective serotonin reuptake inhibitors (SSRIs). The initial success I've had with T4/T3 treatment in people who have been prescribed antidepressants for lingering depression that resulted from a thyroid imbalance is astonishing. T3 has an almost miraculous effect on the brain chemistry. The beauty of this treatment is that blood levels of T4, T3, and TSH stay within the normal range.

As discussed in the previous chapter, it is not unusual for hypothyroid people to experience depression and require an antidepressant. Later, however, when their blood tests have been normal for some time, attempts to stop the antidepressant may cause the depression to return or become worse. In some patients, the antidepressant alone is not enough. When the patient is switched from T4 to the T4/T3 combination, the depression is resolved. It is as if the SSRI was not working properly because the brain chemistry mix was missing a small amount of T3 that was not being provided by the T4 pill.

Pat, a thirty-two-year-old pharmacist, recalls being diagnosed with hypothyroidism when she experienced a major depression that required hospitalization. She had had a previous episode of depression twelve years earlier when she was in college and broke up with her boyfriend. Her psychiatrist put Pat on Prozac along with thyroxine, and she regained normal thyroid function four months later. She continued to have low-grade depression and anxiety, however, despite taking the maximum dose of Prozac and enough thyroid hormone to maintain normal blood levels.

Like most patients with residual suffering, Pat found the solution in the T4/T3 combination treatment. When she came to see me, she wondered whether it was her thyroid that was causing her depressive symptoms to persist. Adding T3 to her T4 treatment in conjunction with the Prozac transformed her mood and energy spectacularly. This treatment clearly augmented the other aspects of her depression treatment. Again, it is likely that the Prozac-levothyroxine treatment was not fully effective in curing the depression because Pat had a T3 deficit in her brain.

The small amount of T3 given in divided doses does not typically cause T3 levels in the blood to rise above the normal range. Nevertheless, before switching to a T4/T3 combination treatment, make sure that your doctor checks you for heart problems. That's because patients with heart disease may have heart rhythm problems or other heart complications that could be adversely affected by even minimal increases in the levels of T3. I do not advocate using this combination treatment in patients who are at increased risk of heart disease, notably older patients. If you are suffering from severe

anxiety, T3 treatment may make your anxiety worse; adding alprazolam for several weeks and then gradually decreasing the alprazolam will prevent this. Combine this protocol with a relaxation technique, diet, and exercise, and use the questionnaires provided in Chapters 3 and 5 before and during treatment so you can assess how well you are doing on this treatment program.

No longer do my patients with persistent symptoms who are being treated with T4 and have normal blood tests leave my office with the verdict that nothing else can be done for their suffering. My patients who had been taking desiccated thyroid now receive a treatment that allows them to feel better without having to accept bone loss as the price.

In my patients with lingering depression, standardized tests of depression show marked mood improvements after T4/T3 therapy. Scores for anxiety symptoms and cumulative physical thyroid-related symptoms go down, reflecting the change from a tired and disconnected person to a happy, symptomless one. One of my many patients who no longer needed Prozac and Zoloft after being switched to T4/T3 treatment told me, "I have not felt this way for God knows how long! Every day I think that this is going to stop working. I have great fears. But it has not. God bless you for bringing my life back together. Nothing worked for me ever before!"

Important Points to Remember

- Hypothyroid patients treated with T4-only drugs may suffer lingering effects because they're missing the right amount of T3, the most potent form of thyroid hormone as well as the main form that works in brain cells.
- Switching from T4 treatment to the T4/T3 combination regimen can begin to resolve emotional and physical symptoms, including depression, as soon as a week after the treatment is started.
- T4/T3 combination therapy may help maintain normal thyroid levels and improve symptoms in people suffering from persistent cases of fibromyalgia.
- Patients with underactive thyroid treated with T4 and an antidepressant for residual depression and fatigue improve tremendously when switched to T4/T3 combination therapy. This treatment can phase out antidepressant therapy.

LIVING A THYROID-FRIENDLY LIFE

Healthful Choices Day by Day

Besides getting the right medical attention, you also need to follow a lifestyle that includes eating healthy foods, taking the right supplements, following an exercise regimen, and practicing relaxation techniques. All of these activities are important for you to reach and maintain optimal physical and mental health, even though some doctors may lead you to believe that regular monitoring of thyroid hormone levels and making adjustments in drug dosages is all you need. But given what we now know of the significant mind-body effects of thyroid disease, you have seen for yourself in the preceding chapters that a combination of therapies is a must.

We've seen the role of stress in triggering or perpetuating thyroid disease. But lifestyle factors also influence the likelihood of your developing a thyroid imbalance, including your diet and whether you exercise. These factors also determine to some extent how severe and consequential a thyroid imbalance will be. Your genes may make you susceptible to developing a thyroid condition, but whether or not you actually develop one is also linked to how you live your daily life.

It is certainly easier to prevent the onset of an autoimmune attack on the thyroid than to treat an imbalance once the attack has occurred. But even when the imbalance has already occurred, you can minimize and even halt some of its adverse effects on your health by following a thyroid-friendly lifestyle. Any such lifestyle must also take into account other health conditions that you have and any other medications you are taking that can contribute to the mental and physical effects of a thyroid imbalance.

If you have an underactive or overactive thyroid, your risk for having cardiovascular disease becomes much higher. The risk may haunt you all your life, even though your thyroid imbalance has been corrected with treatment. For instance, patients treated for Graves' disease suffer from more hospital

admissions with cardiovascular disease than people with healthy thyroids. According to research, patients with Hashimoto's thyroiditis who are older than fifty have three times more risk of being admitted to a hospital for a heart problem.¹ What exactly makes thyroid patients at a higher risk for cardiovascular disease is a subject of speculation. It probably has to do with imperfect thyroid levels with treatment but also with the effect of depression on the heart, lifestyle, nutrition, and antioxidant depletion. You need to take all the measures you can to reduce this risk.

Healthy Nutrition, Healthy Life

What to eat and not eat has become an obsession in our society. For some people, dieting is one way to control weight. For others, eating the right foods is a way to prevent disease. Many people also try to select foods that promote a stable, happy mood.

In Chapter 7, I explained how and why thyroid patients often struggle with weight problems. I also emphasized that if you have a thyroid imbalance, the best diet to follow to overcome your weight is a low-glycemic-load, low-saturated-fat, high-protein diet. As with other major health conditions, including coronary artery disease, high blood pressure, diabetes, and cancer (all leading causes of death in the United States), thyroid disease and its consequences can be prevented or minimized by proper nutrition. The diet that I advocate for weight management is also the most likely to prevent or temper an autoimmune attack on the thyroid.

Research has shown that a high-protein, low-fat diet helps prevent the occurrence of autoimmune disease. Such a diet also appears to slow down the progress of autoimmune conditions.² Eating too much fat will harm your immune system and help precipitate an autoimmune attack on several organs, which could include your thyroid. A diet high in protein and complex carbohydrates and low in fat and simple sugars helps you control your cholesterol and blood pressure and helps prevent damage to your brain from poor blood supply and strokes.

Given the high rate of depression and anxiety among thyroid patients, no diet, however healthy, that fails to take into account the effect of food on mood can be truly thyroid-friendly. The functioning of the brain depends to a great extent on what you eat. A low-glycemic-load diet, rich in good proteins containing essential amino acids, improves your intellectual performance and your mood. If you are suffering from the symptoms of after-meal fatigue and anxiety, difficulty concentrating, rapid heartbeat, and sweatiness, you may be experiencing a rapid drop of blood sugar after a rapid rise. Many people attribute these symptoms to hypoglycemia, whereas a rapid drop (fol-

lowing a rapid rise) could in fact trigger such symptoms without the cause being hypoglycemia (see Chapter 10). After a patient has reached normal thyroid levels, he or she may continue to suffer from symptoms after a meal. To avoid annoying symptoms and low mood, eat more foods with a low glycemic index.

Increase your consumption of complex carbohydrates. It will increase tryptophan and serotonin levels to help alleviate depression.

A soy-based diet like that traditionally eaten by the Japanese is good for your mood and cognition. A soy-based diet is well balanced, high in complex carbohydrates and protein, and low in fat. Soy also has a beneficial effect on cholesterol and triglyceride levels and lowers cardiovascular risks. You can choose from a wide variety of soy-based foods, including frozen desserts, soy cheeses, soy flour, and cholesterol-free soy milk products. While there has been some concern that soy may impair thyroid function, recent analysis of research has shown that soy isoflavones and soy foods do not seem to slow thyroid function in people who have a normal thyroid gland and who take an adequate amount of iodine.³ But if your gland is somewhat compromised and iodine intake is not optimal, soy foods may make your gland become underactive. Also, soy foods may impair thyroid hormone absorption from the gastrointestinal tract. Therefore, avoid consuming high amounts of soy foods for breakfast; but consuming soy products at lunch and dinner time should not affect thyroid hormone absorption. Because of the possible effects of phytoestrogens on mood and cognition, try not to consume more than three servings a week of soy-based foods (see Chapter 17).⁴

Avoid eating regularly high amounts of raw foods containing goitrogens, substances that can impair the manufacture of thyroid hormone. Food such as turnips, cabbage, mustard greens, soybeans, broccoli, cauliflower, kale, brussels sprouts, radishes, peanuts, pine nuts, peaches, apricots, strawberries, and millet are rich in goitrogens. Cooking usually neutralizes goitrogens, so it is quite safe to eat these foods (with limits on soy as noted above) after adequate cooking.

THE ESSENTIAL DIETARY FATS

Fats in the body serve as a source of energy, but that's hardly their only function or even their most important one. Certain fats play roles in bodily processes as diverse as producing hormones and promoting intelligence: some 60 percent of the brain consists of fat. Your thyroid also needs certain kinds of fats to work properly. Like other parts of the body, however, it doesn't need the most common kinds of fat that most people eat.

The essential fatty acids are the fats that you may not be providing in

adequate amounts to your thyroid and the rest of your body. Essential fatty acids play a crucial role on the structure of cell membranes, the formation of various hormone-like substances in the body, proper functioning of the cardiovascular system, and other aspects of health. They're called essential because the body cannot manufacture them on its own: they have to be supplied by foods or supplements. Essential fatty acids are polyunsaturated and are classified in a number of groups, the best of which are the omega-3s and the omega-6s. The chief omega-6 essential fatty acid is called linoleic acid, and the chief omega-3 is alpha-linolenic acid. Consuming olive oil and other vegetable oils will increase your intake of these essential free fatty acids. Linoleic acid, also found naturally in dairy products, provides an anticancer benefit, especially against breast cancer, according to experimental research.

Omega-3 fatty acids play a major role in the structure and the normal function of the brain. For instance, alpha-linolenic acid deficiency disturbs the composition of brain membranes, brain cells, and the protective cells in the brain. In infants, omega-3 fatty acids affect brain and vision development. Omega-3 fatty acids help prevent certain aspects of cardiovascular disease, particularly at the level of blood vessel supply in the brain. Lack of omega-3 fatty acids will cause deficit in the renewal of membranes in the brain and will accelerate cerebral aging, contributing to dementia, including Alzheimer's disease, and depression. Increased consumption of alpha-linolenic acid in the form of flaxseed oil and antioxidants improves symptoms of attention deficit disorder. Low levels of essential fatty acids are associated with depression. An analysis of research published in the *Journal of Affective Disorders* has determined that omega-3 fatty acids are quite helpful for the treatment of depression in adults.⁵

Two omega-3 free fatty acids have attracted the most attention for their health benefits: eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). The primary dietary sources for these two essential fatty acids are various deep-sea fish, such as mackerel, albacore tuna, salmon, herring, and sardines. Eating the flesh of these oily fish or taking fish oil supplements such as liver oil of cod, shark, and halibut helps prevent heart disease. Animal research also suggests that a diet rich in EPA can prevent the occurrence of lupus-like autoimmune disease,⁶ and it may also help prevent autoimmune attacks on the thyroid. Some doctors advocate using EPA in the treatment of rheumatoid arthritis and psoriasis. The known beneficial effects of fish oil are expanding to include prevention of cancer, such as colon cancer. I believe that taking omega-3 fatty acid supplements is a must for all thyroid patients, considering their effects on the immune system, on mood, and on the cardiovascular system.

ANTIOXIDANTS: PROTECTING THE THYROID FROM HARMFUL FREE RADICALS

About two thousand years ago Hippocrates said, “Let food be your medicine and medicine be your food.” Body cells need oxygen to function properly, but the result of oxygen intake is the production of free radicals, which are toxic to cells. A buildup of free radicals produced from bodily metabolism has the propensity to weaken the immune system and the body’s ability to fight disease. Free radicals damage cells and their surroundings. They harm genes, which tell cells what to do and not do. Genetic damage from too many free radicals harms their functioning and could promote cancer.

Antioxidants are natural compounds that have the ability to bind and neutralize free radicals in the body. Antioxidants in the diet minimize the buildup of the “bad guys,” preventing free radicals from damaging important cellular components. In fact, antioxidants can help prevent cancer, and some of them—such as beta-carotene and vitamins C and E—help prevent thyroid cancer.⁷ Adequate antioxidant intake also slows premature aging. This can help your thyroid, too, as advancing age leads to a cellular deficit in zinc and selenium, which may produce lower thyroid hormone action similar to hypothyroidism.⁸

Some antioxidants found in nature not only clear the body’s toxic by-products but are essential for maintaining a healthy thyroid gland and an adequate supply of thyroid hormone. These antioxidants include the trace element selenium and vitamins A, B₂ (riboflavin), B₃ (niacin), B₆ (pyridoxine), C, and E. (See the “Optimal Daily Supplement Levels” list later in this chapter.) Zinc is another important trace element that is essential for the normal production of thyroid hormone. A study found that children with Down syndrome can become hypothyroid as a result of zinc deficiency.⁹ Administering zinc supplements to these children for four months corrected the underactive thyroid. So even if you do not have a thyroid disorder, you need to take adequate amounts of antioxidants to maintain proper functioning of your thyroid.

Although an optimal diet includes plenty of fresh fruits and vegetables (see the accompanying table), these by themselves may not contain enough of the vitamins and antioxidants that you need. Unfortunately, most fruits and vegetables that you buy at the supermarket reach your table several weeks to a few months after harvest. Because the vitamins and antioxidants in fresh foods are unstable, the time lag between harvest and consumption conspire to reduce the amounts of these essential nutrients, as do processing and cooking. In particular, the selenium content of foods is easily lost during processing, storage, and cooking. As a result, many of us are deficient in vitamins and antioxidants. According to the Third National Health and Nutrition

Examination Survey, conducted from 1988 to 1994 in the United States, 13 to 23 percent of people have low vitamin C levels.¹⁰

Another common cause of vitamin and antioxidant deficiency is an infection of the stomach by *Helicobacter pylori*, which is the most common bacterial infection in the world. Nearly 30 percent of the population in developed countries and up to 80–90 percent of the populations in developing regions have *H. pylori* infections, which are associated with stomach ulcers. This infection may make you deficient in iron, vitamin B₁₂, folic acid, vitamin E, vitamin C, and beta-carotene. This same infection may also contribute to the triggering of autoimmune thyroid disease.

Thyroid imbalance itself can make you become deficient in antioxidants. It can promote excessive production of free radicals, overwhelming the cells' ability to neutralize them. This excess of free radicals leads to the progression of degenerative diseases. Research has shown that when the thyroid is overactive, the consumption of oxygen is higher, leading to an accumulation of free radicals that are toxic to cells.¹¹ Antioxidant supplements such as vitamins C and E and mixed carotenoids help cells clear these damaging oxidants and might prevent cellular damage in many parts of the body, including the muscles.

If you are treated for overactive thyroid due to Graves' disease, supplementation with vitamins C and E, beta-carotene, and selenium will make antithyroid medications work faster and will help your thyroid levels become normal much quicker.¹²

ANTIOXIDANTS FOR THYROID PATIENTS

Selenium plays a major antioxidant role in our system. The thyroid gland requires selenium to manufacture adequate amounts of thyroid hormone. Selenium has been shown to have a preventative effect in the occurrence of degenerative conditions such as cancer, inflammatory disorders, thyroid dysfunction, cardiovascular disease, neurological conditions, aging, infertility, and infections. It also has an immune-enhancing effect. In recent years, there has been a decline in blood selenium levels in many European countries,¹³ which could account for the escalating prevalence of cancer and cardiovascular disease in the Western world. Various bacteria in the natural environment and in the environment of our bodies require selenium to survive. Therefore, when certain bacteria pollute the environment, they will consume the selenium available to humans and make us deficient in this trace element essential for proper functioning of the thyroid.

Selenium is important for the functioning of certain parts of the brain. It affects chemicals with some hormonal activity and neurotransmitters in the brain, and for this reason, selenium seems to affect mood and cognition in humans and behavior in animals.¹⁴

For thyroid hormones to work properly in body cells, adequate supplies of selenium are essential. Selenium is a crucial component of the enzyme that converts T4 to T3 in the body.¹⁵ Without it, T3 cannot be produced in the right amounts, and this will make your body hypothyroid even though blood levels are normal. Thus, adequate selenium intake is essential for thyroid hormone to regulate the function of various organs, and will slow down effects of aging. Selenium deficiency causes muscle damage and lowers muscle performance partly because the damaging effects of free radicals on muscle are no longer blocked.

Selenium is also important in modulating the immune system. Selenium deficiency decreases the function of our immune system and promotes viral infections. Selenium deficiency also promotes autoimmune attacks on the thyroid. Taking selenium protects against the occurrence of autoimmune thyroid disease. If you have Hashimoto's thyroiditis, taking selenium will reduce the inflammation in your thyroid and will lower your antithyroid antibodies.¹⁶ Not only does a deficiency in selenium make the immune system attack your thyroid, but your gland is further damaged by free radicals. Low selenium increases the risk of thyroid cancer.

Be cautious, however, when taking selenium supplements. Excessive amounts may cause undesirable effects, including fatigue, abdominal pain, diarrhea, nerve damage, and even infertility. Too much selenium can also damage your thyroid. Selenium taken in a dose of 50 to 100 micrograms daily is adequate to provide significant antioxidant activity.

Zinc is another important micronutrient that is essential not only for the thyroid gland to produce adequate amounts of thyroid hormone but also for thyroid hormone to work more efficiently in our body. Zinc plays a role in the functioning of the immune system. Zinc deficiency promotes autoimmune disease and infections.¹⁷

Zinc affects serotonin uptake in the brain and thus mood and behavior. Zinc is now being viewed as an antidepressant. Research has shown that in major depression, zinc levels are low.¹⁸ If you have thyroid imbalance, even corrected with treatment, and you continue to suffer from low mood, I urge you to take adequate amounts of zinc as well as other antioxidants that affect brain neurotransmitters.

Both hypothyroidism and hyperthyroidism can make you deficient in zinc. However, the deficiency in zinc is more significant in hyperthyroidism, as too much thyroid hormone causes excessive waste of zinc in the urine. Zinc is also low in thyroid cancer.

If you have a thyroid disorder, you need to increase your consumption of vitamin B₆ (pyridoxine) and vitamin B₁ (thiamine). Pyridoxine is important in the conversion of tryptophan to serotonin in the brain. Low vitamin B₆ can promote depressive symptoms. Research has shown that vitamin B₆ is

quite effective in the treatment of premenopausal women who suffer from depression.¹⁹ Depression related to hormonal issues will respond to the addition of vitamin B₆. Pyridoxine as part of a B-complex or multivitamin supplement is very important when you are being treated for an over-active thyroid.

Deficiency in certain B-complex vitamins will result in high homocysteine levels, which causes an increased risk of cardiovascular disease and cognitive impairment in old age.²⁰ If you are low in vitamin B₆, your C-reactive protein (marker of inflammation) will be high, which reflects a higher cardiovascular risk.

Thiamine deficiency causes damage to brain cells and endothelial cells and can promote depression. If you have neuropathy caused by too much thyroid hormone, thiamine deficiency may be contributing to the problem.

Vitamin A is required for the body to convert T₄ to T₃ in appropriate amounts. Too much preformed, animal-derived vitamin A can build up to toxic levels in the liver. However, plant-based vitamin A precursors such as beta-carotene and other carotenoids are nontoxic and are among the most potent antioxidants found in foods.

Vitamin E supplementation has beneficial effects on oxidative damage caused by a thyroid imbalance. Vitamin E can lower the risk of coronary artery disease and strokes, in part by preventing oxidized LDL cholesterol from damaging cells in blood vessels. Vitamin E lowers the risk of prostate cancer and helps with fertility. It also helps the thyroid. Research has shown that the majority of men and women in the United States do not meet the current recommendations for vitamin E intake.²¹

Vitamin E is another vitamin that regulates mood. Blood levels of this vitamin are lower in depression, and in many patients suffering from depression vitamin E deficiency is part of the problem. This substance is involved in nerve membranes as well.

A population-based study in people older than sixty-five showed that supplementation with vitamin E protects against cognitive impairment and dementia in older people.²² Dietary vitamin E may also have a protective effect against Parkinson's disease. As a thyroid patient, you need to take the right amount of vitamin E to preserve your cognitive functions.

Your vitamin E intake should not exceed 400 international units per day, and maybe the ideal intake should be in the range of 150–200 international units per day. Research published in *Preventive Cardiology* has shown that people who take too much vitamin E have an increased rate of coronary artery calcification, which may predispose people to have coronary artery disease.²³ So vitamin E is important, but too much of it is detrimental to the heart.

For a long time, the emphasis has been placed on alpha-tocopherol, one of the eight components of vitamin E (called isoforms), ignoring the “minor” tocopherols. However, recent research has uncovered unexpected beneficial effects of the minor tocopherols, such as gamma-tocopherol.²⁴ The effects of the other tocopherols may not have anything to do with their antioxidant properties, but rather reflect their ability to reduce inflammation and slow down cancer growth. Gamma-tocopherol has a greater beneficial effect as far as prevention of certain types of cancer and heart attacks than alpha-tocopherol. Levels of alpha-tocopherol and gamma-tocopherol in the thyroid tissue in patients with papillary cancer are low.²⁵ Misinformation given to the public that alpha-tocopherol is the only one that we should be concerned about may lead people to become depleted of gamma-tocopherol, losing its great benefits to health and prevention of cancer.

Consuming adequate amounts of vitamin C is crucial for your overall health. Vitamin C is unequivocally the most important water-soluble antioxidant. Research has shown that it is safe to take 1,000 milligrams of vitamin C a day. This will help with brain function, including cognition, and mood. Vitamin C is essential in neurotransmission.²⁶ In fact, the nerve endings contain the highest amounts of vitamin C of any structure in the human body. Vitamin C reduces the risk of neurodegenerative disorders, such as Alzheimer’s disease. It also has beneficial effects on your immune system.

Vitamin C reduces inflammation and makes the cells that cover the inside of blood vessels work more efficiently. This protects you against cardiovascular disease. Also, vitamin C will provide the adrenal glands with the support they need to produce cortisol, the energy and stress hormone. Vitamin C protects DNA against damaging free radicals, protects you against cancer, and reduces growth of cancer. It also makes the absorption of iron in the gastrointestinal tract more efficient, and this lowers the risk of anemia. Consuming aloe vera along with vitamin C will help you better absorb the vitamin C. Vitamin C will protect you from the deleterious effects of heavy metals, such as cadmium, on your thyroid.

Your mood and emotions depend on whether you are taking adequate amounts of folic acid and vitamin B₁₂, both of which are essential for the manufacture of neurotransmitters and affect mood independently of your thyroid levels. Patients with recurrent mood disorders who have been treated with lithium have low folic acid. So if your thyroid imbalance has been corrected with treatment, you may continue to have symptoms of low-grade depression if you are depleted of folic acid or vitamin B₁₂. You are likely to respond better to an antidepressant if you take folic acid and vitamin B₁₂ supplementation.²⁷

Folate, vitamin B₁₂, and vitamin C are also required for homocysteine metabolism. If you lack these important nutrients, not only do you become depressed, but your homocysteine level goes up and your risk for heart disease rises. This explains in part the link that exists between depression and risk of cardiovascular disease. Thyroid imbalance also affects homocysteine levels. Therefore, in addition to having your thyroid imbalance adequately treated, you also need to take sufficient amounts of these supplements. Folic acid at a dose of 800 micrograms daily can improve the symptoms of depression.

Deficiency of folic acid and vitamin B₁₂ can promote impairment of cognition as well. As many as 10–20 percent of older people have vitamin B₁₂ deficiency that could contribute to the decline of their cognitive function.²⁸ Taking folic acid and vitamin B₁₂ is likely to protect you from the decline.

Coenzyme Q₁₀, also called ubiquinone, is a vitamin-like substance. It is crucial in the generation of energy in the cell and also is viewed as an antioxidant. Your levels of coenzyme Q₁₀ typically become low if you have a thyroid imbalance. This has something to do with poor functioning of the mitochondria. If you have congestive heart failure and hyperthyroidism, coenzyme Q₁₀ will improve your cardiac function. After the age of thirty-five to forty, our body begins to lose the ability to produce coenzyme Q₁₀ from food, and a deficiency can easily occur. Stress, infection, and poor eating habits all contribute to low coenzyme Q₁₀. Coenzyme Q₁₀ is an important supplement for thyroid patients since it slows down degenerative disorders of the brain. It is also recommended for Parkinson's disease and other brain conditions. Research has shown that levels of coenzyme Q₁₀ in the thyroid tissue are low in patients with Graves' disease and thyroid cancer.²⁹ Low coenzyme Q₁₀ promotes the occurrence of thyroid cancer and thyroid imbalance. An adequate daily coenzyme Q₁₀ intake is 25 to 50 milligrams. Alpha-lipoic acid is another important antioxidant that increases your glutathione levels and helps clear damaging free radicals. It also makes vitamins C and E work more efficiently.

You also need to pay attention to trace minerals. Some of them, such as copper and manganese, have antioxidant properties and will protect you from free radicals. Vanadium at a dose of 20 to 25 micrograms a day helps with insulin resistance and may help you with your weight. Magnesium is one of the most widespread elements on earth and is found in many foods. However, you can easily become depleted of magnesium if you consume too much alcohol or are sweating a lot during exercise. Magnesium deficiency can promote muscle cramps and weakness, as well as cardiac arrhythmias and high blood pressure. Adequate magnesium intake will also improve your bone mineral density. Magnesium supplementation has been shown to have a ben-

eficial effect on coronary heart disease.³⁰ Magnesium is available in different preparations, but magnesium citrate may be superior to the others. I recommend that you take 200–300 milligrams of elemental magnesium a day.

FOODS RICH IN ESSENTIAL NUTRIENTS

Selenium	Whole grains, wheat germ, oatmeal, mushrooms, cabbage, garlic, egg noodles, soybeans, Brazil nuts, walnuts, cashews, lean beef, tuna, eggs
Zinc	Herring, seafood, fish, lean beef, turkey, wheat bran, whole grains, soybeans, green vegetables, ginger, dairy, nuts
Beta-carotene	Kale, carrots, butternut squash, spinach, cantaloupe, broccoli, asparagus, pumpkin, liver, lettuce, apricots, papaya, ripened oranges, dried peaches and apricots, tomatoes, kiwi, watermelon
Vitamin C	Red peppers, cauliflower, broccoli, peas, kiwi fruit, leafy green vegetables, lemons, white potatoes, orange juice, parsley, cabbage, brussels sprouts, melons, strawberries, tomatoes
Vitamin A	Milk, eggs, liver, apricots, cantaloupe, pumpkin, squash, turnip, carrots, plums, watermelon, plantains, peas, oatmeal, broccoli, spinach
Vitamin E	Whole grains, wheat germ, oatmeal, almonds, soybeans, corn, sunflower seeds, liver, cereals, vegetable oil, leafy green vegetables, asparagus
Riboflavin (vitamin B ₂)	Brazil nuts, almonds, whole grains, wild rice, wheat germ, dairy, eggs, green vegetables, avocados, chicken, turkey, lean pork, organ meats, salmon, asparagus, okra, olives
Thiamine (vitamin B ₁)	Whole grains, brown rice, soy, peas, fish, lean meat, dried beans
Niacin (vitamin B ₃)	Sweet potatoes, cabbage, tomatoes, mushrooms, lentils, asparagus, leafy greens, eggs, nuts, salmon, tuna, beef, chicken, Cornish hen
Vitamin B ₆ (pyridoxine)	Chicken, turkey, roast beef, trout, potatoes, nuts and seeds, peanut butter, lima beans, wheat bran, oatmeal, liver, green beans, bananas, carrots
Folic acid	Beans, whole grains, green peas, broccoli, avocado, leafy greens, turnips, brussels sprouts, okra, citrus fruits, shellfish, legumes
Vitamin B ₁₂ (cobalamin)	Shellfish, meat, poultry, eggs, dairy products

How much of the various vitamin and antioxidant supplements should you take every day? The following list summarizes my recommendations:

OPTIMAL DAILY SUPPLEMENT LEVELS

- Vitamin C: 750–1,000 milligrams
- Vitamin E: 150–200 international units

- Vitamin D: 1,000 international units
- Beta-carotene and mixed carotenoids: 2,000–4,000 international units of vitamin A activity
- Selenium: 50–100 micrograms
- Zinc: 15–20 milligrams
- Thiamine (vitamin B₁): 1.0–1.5 milligrams
- Riboflavin (vitamin B₂): 1.5 milligrams
- Niacin (vitamin B₃): 15–20 milligrams
- Vitamin B₆ (pyridoxine): 50–100 milligrams
- Folic acid: 400–800 micrograms
- Vitamin B₁₂ (cobalamin): 1–2 micrograms

You can take these antioxidants as individual supplements or in a form of a well-balanced combination such as ThyroLife. ThyroLife supplements combine all the vitamins and antioxidants in the right amounts that will help protect your brain and provide support to your immune system and thyroid as well as enhance your energy and metabolism. (For details, see thyrolife.com.)

If you are suffering from an overactive thyroid, I recommend that you take the vitamins and antioxidants even when your thyroid levels are still high. If, on the other hand, you are hypothyroid, it is probably safer to start taking the supplements when your levels have become normal or close to normal. This is to avoid buildup of these supplements in your system.

Iodine: A Double-Edged Sword

The trace mineral iodine is an essential component for the manufacture of thyroid hormone by a healthy gland. To function normally, the thyroid requires 150 to 200 micrograms a day, which is far surpassed in most Americans' daily diets. In the United States, iodine consumption ranges between 300 and 700 micrograms a day. For the vast majority of Americans, advice such as "Supplement your diet with iodine to assist your thyroid" has no scientific basis and is actually harmful. Because high iodine intake can cause or precipitate autoimmune attacks on the thyroid, researchers are speculating that the increasingly high frequency of autoimmune thyroid disease being observed in the United States and Japan is partly the result of overly high iodine consumption.³¹ Research has clearly established that the high dietary iodine content in some areas of the world has resulted in a rise in the prevalence of thyroiditis and thyroid cancer.³²

Too much iodine in your diet will cause iodine to be trapped by a large protein found in the thyroid gland called thyroglobulin. The process of manufacturing thyroid hormone takes place in this protein. High amounts of io-

inated thyroglobulin prompt the immune system to react and to cause an inflammation in the thyroid, characteristic of Hashimoto's thyroiditis. Animal research has demonstrated that the severity of autoimmune thyroiditis is increased by high iodine intake.

A few years ago, NASA physicians consulted me because they had observed low-grade hypothyroidism in a few people participating in a ground study. The imbalance occurred within a few weeks of the subjects' beginning to consume high amounts of iodine. The amount of iodine given to these people was 4 grams per liter, comparable to the amount delivered to astronauts in flight, who consume recycled water with iodine added to keep it sterile. In Russia, silver is used instead of iodine. In some of the ground subjects, the consequences of the high iodine intake might eventually have included an autoimmune attack on the thyroid gland. One of these people had a persistent low-grade overactive thyroid after having been low-grade hypothyroid. Alarmed by my warnings about the potential consequences of thyroid imbalance for both astronauts and ground subjects, NASA decided to change its sterilization system and made the study participants stop the high iodine intake.

Inadvertent intake or administration of products high in iodine can trigger a thyroid imbalance among patients with Hashimoto's thyroiditis and Graves' disease. Too much iodine can cause hypothyroidism in certain patients with Graves' disease, particularly those who had regained normal thyroid function after treatment. Clearly, consuming high amounts of iodine from taking sea kelp supplements (sea vegetables are a particularly rich source of iodine) or using large amounts of iodized salt may represent a health hazard for thyroid patients.

Iodine excess from certain medications and contrast agents used in X-ray procedures also places thyroid patients at risk for thyroid dysfunction. For example, chronic ingestion of expectorant solution containing inorganic iodine for treating lung disease has been shown to cause goiter and hypothyroidism. Even iodinated glycerol, which was thought to be a safe alternative and contains no organic iodine, has been shown to result in hypothyroidism. Amiodarone, a medication commonly used to correct life-threatening heart rhythm problems, contains large amounts of iodine (75 milligrams per tablet). Approximately 20 percent of people taking amiodarone become hypothyroid, and 2 percent develop hyperthyroidism. In parts of the world where iodine deficiency remains a problem, amiodarone causes more hyperthyroidism and less hypothyroidism than it does in the United States.

Marcie, a thirty-five-year-old housewife whose sister had been diagnosed with Hashimoto's thyroiditis and an underactive thyroid a few years previously, visited a physician because of weight gain and fatigue. Disappointed that her thyroid tests were normal, and being left with no explanation for her symptoms, she began reading nutritional books, one of which recommended

2,000 to 3,000 milligrams of kelp every day as essential for a healthy thyroid. Marcie took the suggested supplements, thinking that ingesting too much iodine would reduce her likelihood of having a thyroid problem like her sister's and might alleviate her symptoms. As a result, however, she became afflicted by an overactive thyroid due to Graves' disease.

Among common foods, seafoods contain the highest amounts of iodine. These include lobsters, crabs, oysters, and other shellfish. Plant and dairy products may have some iodine if they are derived from areas that have iodine in the soil. (Soil in ocean coastal areas usually has higher iodine levels than soil in inland areas.) Other foods that contain high amounts of iodine are breads and eggs. Iodized salt, which contains 70 micrograms per gram of salt, is the most common source of iodine for most Americans.

People like Marcie with a known genetic predisposition to an autoimmune thyroid disease should avoid excess iodine. If any of your relatives have thyroid disease, minimize the use of iodized salt insofar as possible. Although the general recommendation is that dietary consumption should not exceed 1 milligram of iodized salt per day, I advise not consuming more than 500 to 600 micrograms a day.

Whereas too much iodine is harmful to the thyroid gland and can result in an under- or overactive thyroid, too little iodine in the diet can result in goiter and an underactive thyroid. When the level of iodine in the blood and in the gland is low, it causes the thyroid cells to enlarge and proliferate as a result of stimulation by the pituitary TSH (thyroid-stimulating hormone). If you routinely engage in heavy exercise or if you are an athlete, you may lose a considerable amount of iodine in your sweat. The loss of iodine depends to a great extent on the temperature and humidity of your environment.³³ If iodine losses are not replaced, you can become depleted of iodine, which will slow down your thyroid and will affect your athletic performance. Nearly 200 million people worldwide suffer from iodine deficiency and resulting goiters. In some parts of the world where the iodine content of the soil and thus the food is very low, and fish are not prominent in the diet, more than 50 percent of the population has a goiter. Because the functioning of the thyroid gland in a developing fetus relies on the iodine supplied by a pregnant woman, women living in an iodine-deficient area may deliver babies with brain impairment. This condition is easily preventable by taking supplemental iodine.

In the United States, iodine deficiency has been rare since 1924, when table salt producers started to add iodine. Ironically, this same measure that was originally taken to prevent iodine deficiency and goiter might be one of the reasons for the rise in the frequency of autoimmune thyroid disease in people having the genetic predisposition. Nevertheless, some people do suffer from mild iodine deficiency. Clearly, a balance must be reached. You need to avoid both iodine deficiency and iodine excess.

Calcium and Vitamin D

An overactive thyroid can make you lose a significant amount of bone over time. If you have an underactive thyroid and if you are overtreated with thyroid hormone, you also become at risk for losing bone. The risk is even greater if you are postmenopausal. Being subjected to high thyroid hormone levels for a prolonged period of time is especially worrisome if you have other risk factors for osteoporosis. These include being thin or a Caucasian woman, suffering from diabetes, smoking, or having a family history of osteoporosis.

If you consume too little dietary calcium and cannot eat dairy products because you have lactose intolerance or need to follow a low-fat diet, supplement your diet with at least 1,000 milligrams of elemental calcium (for instance, in the form of calcium carbonate) per day. Even consuming dairy products may not provide enough calcium to meet your recommended daily requirement. Calcium supplementation is the solution for most people. Calcium supplements can cause constipation, however. To alleviate or prevent constipation while taking calcium supplements, be sure to exercise and drink six to eight 16-ounce glasses of water a day. The exercise will also help protect you from further severe bone loss. Adequate intake of vitamin D in conjunction with calcium is needed to maintain bone health and muscle strength. Vitamin D deficiency is an overlooked and unrecognized epidemic among all of us. Vitamin D deficiency causes rickets in children, but also precipitates and worsens bone loss and osteoporosis in adults. A recent research study published in the *Journal of Clinical Endocrinology and Metabolism* showed more than half of North American women receiving treatment for osteoporosis have vitamin D deficiency.³⁴ Patients with vitamin D deficiency often complain of joint and muscle pains and aches.

Most people depend on sun exposure to meet the requirements for vitamin D. The season, latitude, time of day, skin pigmentation, age of the person, and use of sunscreen all affect the manufacture of vitamin D in the skin. I recommend five to ten minutes of exposure of the arms and legs, or the hands, arms, and face, two to three times per week in addition to increased dietary and supplemental vitamin D intake.

Bone and muscles are not the only organs regulated by vitamin D, which additionally regulates cell growth and modulates the immune system. Vitamin D supplementation is recommended for the prevention of cancer and for helping to improve autoimmune diseases, insulin-dependent diabetes, and multiple sclerosis. Vitamin D at a dose of 1,000 international units per day is likely to reduce the risk of colon cancer by 50 percent. Research in Japan showed that patients with Graves' disease have lower blood levels of 25-hydroxy vitamin D, and 35 percent of patients with Graves' disease have vitamin D deficiency.³⁵ To prevent or reduce the effects of an autoimmune

attack on your thyroid, you need to make sure that your vitamin D levels are in the ideal range. Several other autoimmune conditions such as systemic lupus erythematosus, rheumatoid arthritis, type I diabetes, and even multiple sclerosis seem to have something to do with vitamin D deficiency.³⁶ Vitamin D treatment may be effective to slow down the progression of advanced thyroid cancer. This nutrient also plays an important role in the brain as a neuroactive chemical, modulating mood and emotions. Seasonal affective disorder is a subtype of depression that occurs only during the winter months. It is thought that low levels of vitamin D plays a role in the occurrence of seasonal affective disorder.³⁷

Optimal Diet: Putting It All Together

Healthy nutrition is essential for controlling weight, preventing degenerative diseases, maintaining a positive mood, and extending longevity. It is probably even more crucial for thyroid patients than for anyone else, because thyroid hormone is one of the major factors that allow the body to adjust its metabolism to the kind of food we eat in order to prevent weight gain. The accompanying table summarizes what I think are the best and most important features of a thyroid-friendly diet.

SUMMARY OF IMPORTANT BENEFICIAL EFFECTS OF RECOMMENDED NUTRITION FOR THYROID PATIENTS

Components of Healthy Nutrition	General Beneficial Effects
Well-balanced diet low in fat, high in protein, high in complex carbohydrates, low in simple sugars	Weight management Cholesterol control Decrease in autoimmune reaction Mood Enhancement Reduction in cravings
Antioxidants and vitamins (selenium, zinc, vitamin E, beta-carotene, vitamin C, vitamins B ₁ , B ₆ , B ₁₂ , and folate)	Prevention of thyroid cancer Weight control Decrease in degenerative damage Prevention of thyroid damage and autoimmune reactions to the thyroid Increased efficiency of thyroid hormone Mood enhancement Prevention of deficiencies that can contribute to dementia Decrease in cardiovascular risk

Components of Healthy Nutrition

Essential fatty acids

Vitamin D

General Beneficial Effects

Decrease in autoimmune attacks

Mood benefits

Cardiovascular system benefits

Maintenance of cell membrane integrity

Weight benefits

Bone and muscle strength

Decrease in autoimmune attacks

Cancer prevention; slows down progression
of thyroid cancer

Mood benefits

The Benefits of Exercise

Thyroid patients often ask me whether they can engage in physical exercise. I don't recommend strenuous exercise while you are still hypothyroid or hyperthyroid. You risk muscle damage from the exercise when there is a thyroid hormone deficit. Strenuous exercise during hyperthyroidism should be avoided, too, because the performance of many parts of the body—such as the heart, muscles, and respiratory system—is somewhat impaired. When thyroid hormone levels have become normal, however, I highly recommend physical exercise, not only for weight control but also because exercise produces psychological benefits related to mood and self-esteem. These are crucial for patients who have experienced a thyroid imbalance.

Regular exercise relieves tension, anger, and confusion. Exercise training is effective in improving mood, alleviating depression and anxiety, and also reducing the perception of stress. Exercise promotes new cells in the brain. Animal research has shown that exercise increases brain cell generation in the hippocampus, the area of the brain that regulates mood, two- to three-fold. Exercise has the same effect on brain cell generation as antidepressants.³⁸

During a thyroid imbalance, before blood tests have become normal, I recommend only mild aerobic exercise such as walking fifteen to twenty minutes daily. This strengthens the heart and lungs and allows you to adjust to the new demands of your body as thyroid levels normalize. Avoid rigorous anaerobic, muscle-building exercise in this phase of treatment because metabolism in the muscle is either too slow or too rapid, and it may impose demands on muscles that cannot be met without damaging them.

There are three main reasons why a wellness program designed to provide optimal physical and mental health for thyroid patients should include exercise:

1. Exercise or regular physical activity boosts endorphin levels and alleviates low mood.
2. Exercise increases muscle mass, which in the long run will raise metabolism. It is thus essential for weight control for both hypothyroid and hyperthyroid patients once blood levels have become normal.
3. Exercise improves heart function and prevents damage to blood vessels in the body and brain. Reducing your risk of vascular disease is an investment for your future. It will help you minimize the risk of impaired cognition brought on with aging.

Assuming that you are not suffering from any kind of heart condition, follow an exercise program that fulfills these three long-term goals, implementing the program in three consecutive phases.

Phase one: This is an initiation phase, during which you perform endurance exercise three days a week for only thirty to sixty minutes. It can include:

- Walking
- Stair-stepping
- Swimming
- Cross-country skiing
- Bicycle riding
- Jogging
- Treadmill exercise
- Cycling
- Rowing

You should stretch for five to ten minutes prior to each session and take a cool-down period of five to ten minutes of walking or stretching after each session.

Phase two: This can begin during the second month, when you are ready to increase the frequency of endurance exercise from three to six days a week. This step-up period should extend from one to two months. You can increase to four days a week the first week, five days a week the second week, and six days a week the third week. While gradually increasing the frequency of endurance exercise, you should begin a strength-training program. A good target for strength training is thirty minutes a day, three days a week.

Phase three: This comes later, when you are ready to follow a maintenance program, and combines endurance exercise six days a week and strength training three days a week.

Aerobic exercise strengthens the heart and makes it more efficient. It improves mood and helps you burn calories and fat. It is the cornerstone of

any exercise program that will help you to take control of your health once again. If you are forty or older or have any history of heart disease, you need to check with your physician. He or she might recommend a heart stress test prior to commencing the exercise program, to estimate your level of fitness and determine whether you have heart disease. Stress tests are a good idea for most people who had hypothyroidism that remained undiagnosed for a long time.

Medications That Can Affect Your Thyroid

Thyroid patients often wonder whether taking various over-the-counter medications will affect their thyroid function. Whether you are hypo- or hyperthyroid, you should not be overly concerned about taking most cold remedies and decongestants—as long as your blood thyroid levels are relatively stable. Some cold remedies containing pseudoephedrine may cause a hyperthyroid person to have more symptoms of thyroid hormone excess, such as trembling, nervousness, sleep problems, and rapid heartbeat. Taking a decongestant that contains pseudoephedrine may also be a concern if you are hyperthyroid and have a heart condition. You should also avoid antihistamines that cause a drowsy effect if you have hypothyroidism and your thyroid levels are still low. Note as well that whether you have an underactive or overactive thyroid, too much caffeine may increase your anxiety symptoms and cause your heart to beat even faster.

Avoid sleeping pills and sedatives when your thyroid levels are low. It is not unusual for sedatives to precipitate myxedema coma, a dangerous condition related to very low thyroid, especially in older people. Because low thyroid slows the clearance of these medications from your body, they may make you drowsy.

Thyroid patients taking warfarin (Coumadin), a blood thinner used to treat phlebitis and some forms of cerebrovascular disease, should be aware that their thyroid levels will affect the dosage needed to maintain the desired level of anticoagulant effect. If the thyroid levels become high or low, they will need a change in the dose of warfarin.

Thyroid hormone levels also affect the levels of many other medications. Those that need to be adjusted when you have a thyroid imbalance include beta-blockers and digitalis (which is used for congestive heart failure). Theophylline, an antiasthma drug, may also need to be adjusted. A number of medications taken for asthma may heighten the effect of thyroid hormone. Some antiasthma medications should be avoided when your thyroid levels are high.

People who develop mild hypothyroidism from taking the heart drug amiodarone should have their TSH monitored. Doctors should not, however,

prescribe thyroid hormone replacement unless the degree of thyroid underactivity is significant (TSH higher than 20). In many patients, the hypothyroidism is transient, and TSH will become normal over time, even when they continue to take the medication.

Hyperthyroidism from amiodarone use represents a more complex problem, since excess thyroid hormone can cause irregularities in heart rhythm and makes amiodarone less effective in controlling this problem.³⁹ Hyperthyroidism due to amiodarone should be promptly corrected. Two distinct types of hyperthyroidism are caused by amiodarone, however. Type I is the result of an increase in iodine uptake by the gland or an increase in the amount of thyroid hormone manufactured. Type II is due to the medication's having a toxic effect on the gland, which results in damaged thyroid cells' releasing thyroid hormone into the bloodstream (similar to what happens in silent thyroiditis and subacute thyroiditis; see Chapter 4). It is important for your physician to determine which is the predominant mechanism for the hyperthyroidism, since the required treatment differs. Interferon, a medication used to treat chronic viral hepatitis, multiple sclerosis, hematological tumors, and cancer, frequently causes thyroid dysfunction. One study showed that 6.2 percent of patients taking interferon experience a thyroid dysfunction,⁴⁰ with hypothyroidism occurring in 3.9 percent and hyperthyroidism in 2.3 percent. Women with a preexisting autoimmune thyroid condition are at higher risk for having a thyroid imbalance due to interferon. The most common thyroid problem is a destructive thyroiditis that causes hyperthyroidism, followed by hypothyroidism. Thyroid dysfunction is often mild and self-limited. The imbalance resolves in 60 percent of patients whether you continue taking interferon or not.

Many people with lingering depression receive a course of antidepressants (see Chapter 17), which may require an increase in the thyroid hormone dosage.⁴¹ Patients with a known thyroid disorder who are given antidepressants must be tested more frequently and the dose of thyroid medication adjusted. Otherwise, the antidepressant may be less effective in treating the depression.

Lithium can result in hypothyroidism, too, since it inhibits the release of thyroid hormone from the thyroid gland and causes the gland to retain iodine. Research has shown that lithium can promote an autoimmune attack of the Hashimoto's thyroiditis type on the thyroid. It can also exacerbate Hashimoto's thyroiditis and cause more damage to the gland. A significant number of people who take lithium for mood swing disorders have evidence of an underactive thyroid. More rarely, lithium can induce an overactive thyroid related to an autoimmune attack on the thyroid. Hyperthyroidism may rarely occur after patients discontinue lithium. Stop-

ping the lithium causes overactivity of the thyroid gland as a rebound phenomenon.

In someone with preexisting Hashimoto's thyroiditis, the addition of lithium may cause an even more profound state of hypothyroidism and may confound the mental problems associated with the bipolar disorder. For this reason, manic-depressive patients treated with lithium often have thyroid testing on a regular basis. Even if the underlying thyroid gland is normal, lithium can cause mild or low-grade hypothyroidism, which should be treated with thyroid hormone to minimize the adverse effects of low-grade hypothyroidism on the mood swings. Treatment with thyroid hormone may help people with manic-depression and lithium-induced low-grade hypothyroidism avoid mood episodes.

Alcohol and Nicotine: Enemies of the Thyroid

Heavy alcohol consumption and depression often go hand in hand. Alcohol interferes with normal thyroid balance because depressed and alcoholic hypothyroid persons push their self-neglect to such a point that they may stop taking their medication or take it irregularly, thereby precipitating another vicious cycle. Alcohol consumption also contributes to excess caloric intake and increases the risk of weight gain.

Smoking harms most of your vital organs, and the thyroid gland is no exception. Research has shown that smoking increases the risk of Graves' disease by almost three-fold⁴² and can worsen eye disease in patients with autoimmune thyroid conditions. If you have Graves' disease and it is in remission, smoking will make you more likely to have a relapse. The severity of an autoimmune attack on the thyroid is more pronounced among pregnant women who smoked heavily prior to pregnancy. Both active and passive smoking have been proven deleterious to the fetal thyroid. Tobacco smoking also increases the risk of goiter. Thiocyanate, which is a breakdown product of the cyanide in tobacco smoke, does not allow the gland to utilize iodine and will promote multinodular goiter. It also impairs thyroid hormone production and may cause hypothyroidism in a person deficient in iodine. Epidemiological research using thyroid ultrasounds and blood tests showed a strong association between thyroid multinodularity and tobacco smoking. However, the prevalence of low-grade hypothyroidism is not increased with tobacco smoking.⁴³

Other factors in the environment, including mercuric chloride, silicone, anilides, vinyl chloride, toxins, and ultraviolet irradiation, can promote an autoimmune attack on the thyroid and can damage your thyroid.⁴⁴ This is more likely to happen if you are genetically predisposed to having an autoimmune attack.

Improper Use of Thyroid Hormone for Weight Control

Thyroid hormone has quite often been prescribed to weight-clinic patients without preliminary thyroid testing, a practice that could be dangerous to patients with heart disease or a tendency toward emotional instability. The doses prescribed frequently exceed what a normal thyroid gland produces. People that are overweight who are given T3 and who are also placed on a low-calorie diet have a greater loss of weight than persons on a diet alone. Therefore, thyroid hormone treatment may be effective in producing the desired weight loss, but as a consequence these patients develop thyroid hormone excess and symptoms of hyperthyroidism. While the person may be initially happy with the weight loss, he or she may experience anxiety, mood swings, anger, difficulty concentrating, and even weakness. In other people this may cause an amphetamine-like effect and a state of hypomania. I have also witnessed inadvertent thyroid hormone treatment of patients with dormant Graves' disease trigger a state of permanent hyperthyroidism that has resulted in significant mental suffering.

Another drawback of using thyroid hormone for weight control is that T3 increases muscle breakdown to a greater extent during dieting. This is a high price to pay for a temporary weight loss. Long-term results of T3 are often disappointing—most people regain the weight.

In recent years the availability of natural desiccated thyroid preparations, sold over the counter, in natural food stores, or even by mail order, has become a health hazard to the public and may be responsible for thyroid hormone overdose. For instance, people who took Enzo-Caps, a diet pill sold as a nonprescription capsule made from "natural food products" of papaya, garlic, and kelp, became hyperthyroid.⁴⁵ Analysis of the Enzo-Caps showed that the T3 and T4 content of a single capsule was equivalent to what is found in 60 to 120 mg of desiccated thyroid. Similarly, several years ago a hundred women from various areas of Japan became unintentionally hyperthyroid as a result of taking a weight-reducing pill, Basetsuper, containing thyroid hormone.⁴⁶ A third of these women experienced psychiatric problems. Two women needed to be admitted to a mental institution, where doctors diagnosed an addiction to the medication. I therefore urge you to pay attention to exactly what you are taking when you attend a diet clinic or you decide to use supplements for weight control.

Important Points to Remember

- The best diet to help thyroid patients with mood, weight control, and disease prevention is a diet low in refined sugar and animal fat and rich in complex carbohydrates and protein.
- Make sure you are taking the right amount of antioxidant supplements and vitamins. They will reduce damage to the thyroid gland and make thyroid hormone work more efficiently in your body. The supplements will help you preserve a healthy body and a healthy brain.
- You need to achieve the right balance in your iodine intake. Too much can be harmful to your thyroid; too little can make your gland underperform.
- Exercise is an important component of the mind-body program. It will keep you both physically and mentally healthy.

LIVING WITH THYROID EYE DISEASE

Thyroid eye disease, formerly known as Graves' eye disease, is one of the most dreaded thyroid-related conditions because of its potential emotional, personal, and professional effects on a person's life. In the minds of many people, having Graves' disease is associated with having bulgy eyes. I should note, however, that at the most half of those with Graves' disease have bulgy eyes, and some people with Hashimoto's thyroiditis who have either normal or below-normal thyroid function may have this thyroid-related eye disease.

Support groups dealing exclusively with thyroid eye disease have formed in the United States and other countries to help patients understand their disease and cope with their suffering. Despite these organizations' efforts to help people become better informed about thyroid eye disease, fear generated by the unknown continues to be rampant among patients with Graves' disease. However, in less than 20 percent of patients with thyroid eye disease is the condition severe enough to require aggressive intervention. Technological advances in corrective surgery as well as other treatments have improved the prospects of these patients.

The Affinity between the Eyes and the Thyroid

Eye problems range along a continuum from minimal to severe in thyroid eye disease.¹ If researchers did a diagnostic study, such as an ultrasound or a magnetic resonance imaging (MRI) of the eye orbits (bony sockets), they would find that more than 90 percent of people with Graves' disease have some involvement not of the eyes themselves but of the fat surrounding the eyes and the muscles that are responsible for the movement of the eyes. There

is typically an enlargement of the muscles due to inflammation. Nearly 40 to 45 percent of people with Graves' disease have evidence of minimal involvement of the tissue surrounding the eyes but show no symptoms. Of the more than 50 percent remaining, the eye disease can range from mild to very severe.

Although thyroid eye disease is not a direct consequence of the thyroid condition, it occurs as a result of the immune system's having produced antibodies that target the eye muscles and structures situated around the eyes. The reason for the production of such antibodies in persons with thyroid disease is related to similarities in the structure of the eye muscles and the thyroid gland.² Because of these similarities, the immune system attacks the eyes as well as the thyroid. Therefore, the eye disease may be viewed as an incidental process occurring in autoimmune thyroid disease. Some patients, however, have eye symptoms even though their thyroid function is normal. In fact, nearly 10 percent of patients with thyroid eye disease have normal thyroid levels. In such patients, the eye disease progresses on its own and may be the only actual problem the patient experiences. A number of these people, when followed for months or years, may subsequently develop some kind of thyroid dysfunction, either hypothyroidism or hyperthyroidism.

Thyroid eye disease is more common in women than men simply because Graves' disease is primarily a woman's condition. Severe cases, however, tend to occur in older people and men.³

Thyroid eye disease may have one or more of three major components:

1. An inflammation of soft tissue that can affect the conjunctiva (a protective fine layer of mucosa normally covering the sclera of the eye and inner parts of the eyelids) and structures surrounding the eyes. This can cause redness, a sensation of sand in the eyes, increased tearing, and visible swelling around the eyes.
2. Swelling and increase in the volume of fat inside the orbit. This promotes excess pressure on the eyes and makes them protrude. Pressure on the optic nerve can also result in optic neuropathy (an inflammation and damage to the optic nerve) that can threaten vision.
3. Inflammation and loss of function in one or several of the four small muscles that are normally responsible for the movement of the eyes.

How a person reacts to being diagnosed with thyroid eye disease is affected to some extent by the timing of the onset of the eye problem in relation to the thyroid imbalance. The onset of thyroid eye disease could occur simultaneously with the onset of hyperthyroidism, or it could occur months or years before or after. People who have just been diagnosed with hyperthyroidism

due to Graves' disease but who do not currently have the eye disease typically ask, "What about my eyes? Will I ever have bulgy eyes?" As is the case with most questions pertaining to thyroid eye disease, the physician's answer is often, "I don't know." If you have been diagnosed with an overactive thyroid due to Graves' disease, you need to educate yourself about what to watch for should you develop eye disease.

Some of the most important eye changes in Graves' disease are the retraction of the upper eyelids, resulting in a wide-eyed look (because more of the visible portion of the eye is uncovered when the person looks straight ahead) and infrequent blinking. The condition is also responsible for the upper eyelid's inability to smoothly follow downward movements of the eyes when the person is asked to look down (doctors call this "lid lag"). In addition, when the patient looks straight ahead without staring, one can see a white band of sclera (connective tissue) above the border of the cornea (the central colored circle of the eye). This retraction of the upper eyelid, resulting in the impression of staring and a widening of the eyes, frequently causes cosmetic concerns when it is noticed by patients or their family and friends. Appearance issues become an even greater concern when bulgy eyes develop, resulting from swelling in the fat tissue surrounding the eyes.

Other types of changes not only have cosmetic implications but also cause the patient significant discomfort. These include changes inherent to the inflammatory reaction of the soft tissue of the orbit, such as increased tearing, a feeling of having a foreign body in the eye, and a sensation of tense eyes. The eyelids become swollen and pockets of fluid form below the eyes, the conjunctiva becomes red, and blood vessels become apparent, as occurs in allergic reactions involving the eyes. This redness and blood congestion in the visible structures surrounding the eyes result in part from increased pressure within the orbits. In some patients, exposure to warm temperatures and radiation from the sun cause eye irritation and prevent them from engaging in outdoor activities during warm weather.

The most disabling symptom of the condition is double vision, resulting from inflammation and thickening of the eye muscles. Eye movement abnormalities may occur, the most common one involving the upward movements of the eyes. Finally, when the disease has progressed significantly, the protrusion of the eyes may cause the cornea to be exposed continuously even during sleep, thus making it susceptible to damage from foreign bodies. This may result in infection or perforation of the cornea, potentially causing loss of vision and even loss of the eye. Another dreaded effect is the compression of the optic nerve, which is likely to restrict vision. It is due to muscle swelling and enlargement as well as swelling of the orbit content.

The following lists summarize the symptoms of thyroid eye disease:

MOST COMMON SYMPTOMS

- Aversion to light
- Redness of eyes
- Protruding eyes
- Swelling of upper eyelids
- Blurred vision
- Watery eyes
- Sore eyes
- Gritty sensation in eyes
- Aches behind the eyes
- Dry eyes
- Poor night vision
- Eye pain when the person moves around
- Flashing lights

LESS COMMON SYMPTOMS

- Double vision
- Reduced sight in one eye or (more rarely) both eyes
- Reduced color brightness
- Swelling of lower eyelids

Which Comes First: The Eyes or the Thyroid?

Some Graves' disease patients initially develop symptoms of hyperthyroidism with virtually no eye symptoms. Months or years after their thyroid condition has been treated, however, eye symptoms such as bulging or irritation of the conjunctiva or even eye muscle malfunctioning may develop.⁴ These symptoms may be attributed to other problems or may come as an unhappy surprise. Although you shouldn't become unduly alarmed about your chances of being afflicted with this condition in the future, you do need to learn about possible symptoms of thyroid eye disease.

Theresa, age forty-nine, had experienced no eye symptoms whatsoever in the twelve years since she had received radioactive iodine treatment for hyperthyroidism due to Graves' disease. Suddenly, she started having redness in her eyes, as well as puffiness, and her eyes began to bulge. Not suspecting that her eye symptoms were related to her thyroid condition, she went to see an ophthalmologist, who made the connection.

Theresa was devastated. She was also infuriated that no one had explained to her that this could happen even twelve years after the radioiodine treatment. "When I started having the eye problem," she said, "I was concerned about my appearance. The eyes were getting larger but were

not grotesquely buggy at the beginning. I was aware of some eye changes, but I didn't know what they meant." Theresa was happy to hear that her eye disease was not severe. In fact, her eye condition later improved with treatment.

If eye disease occurs at the same time as the thyroid imbalance, the diagnosis is easy. The patient is frequently frightened, however, by the presence of eye problems. The fears are exaggerated because of the anxiety and loss of control or depression frequently generated by the thyroid imbalance. The loss of self-esteem that can be provoked by the thyroid imbalance is exacerbated by the appearance or functional impairment of the eyes and may make the thyroid patient feel unable to function mentally or physically.

In some patients, the onset of hyperthyroidism and eye disease is simultaneous, but the hyperthyroidism symptoms are minimal, so the only discomfort experienced is related to the eyes. The suffering of such patients can be compounded by dismissal, misdiagnosis, or a lack of understanding, which could continue for a long time before doctors make the correct diagnosis and initiate treatment of the eye problems. The patient and even physicians frequently implicate allergies. Barbara Bush indicated in her memoirs that she attributed her eye symptoms to allergies for some time before she was diagnosed with Graves' disease.⁵

Paulette, like many patients with Graves' disease, suffered from eye symptoms but had no symptoms of a thyroid imbalance. She wandered from physician to physician for almost a year and was diagnosed with allergies even though she was experiencing worsening eye disease. She said:

When I finally found out what was wrong with me, it had taken exactly one year and a lot of treatments at an allergy clinic that I was referred to. The doctor there who was giving me allergy shots kept telling me that my eyes were becoming red and itchy from allergies. I was told I was allergic to a lot of things, especially cats, but that was not my problem.

Although the patient and his or her immediate family may not notice the eye changes, strangers who see the person for the first time may notice these changes and even comment on them. Laura, the wife of a physician, suffered from undiagnosed hyperthyroidism due to Graves' disease for more than a year and was angry that her husband had failed to notice the changes that strangers immediately spotted. Laura said:

People would ask, "What is wrong with your eyes?" Even people I didn't know. One day, someone took a close-up picture of me, and when I saw it, I

was stunned. How could my husband have let me go to work like this? No wonder people ask me what's wrong with my eyes! Now I'm self-conscious about it.

Because few ophthalmologists are trained to recognize or manage thyroid eye disease, patients suffering from eye problems due to undiagnosed Graves' disease may remain undiagnosed for some time even when they are seen and evaluated by eye doctors.

Twenty-nine-year-old Elizabeth, an attractive, successful architect, was under the care of an ophthalmologist when she showed signs of thyroid eye disease. She was seeing the ophthalmologist to have a radial keratotomy, a surgical procedure involving the cornea and aimed at correcting myopia. She could not see as clearly as she had before and wanted to correct her focusing problem to eliminate the need for glasses. Prior to the scheduled surgery, Elizabeth started experiencing more symptoms in her right eye, which became swollen and developed a pocket. She said:

It was like a water bubble. I could push it, and it was squishy. I could feel the pressure on it, and I started getting headaches. I thought maybe I had contracted an infection or the eyedrops had done it. I did not notice the eyelid receding, though my eye looked puffy and bruised. I told the ophthalmologist, "I know I'm scheduled for surgery, but my eye is doing something." He looked in my eye and saw no infection, so he recommended going ahead with the surgery.

The surgery caused swelling for maybe two weeks. When I went back for my visit, I started complaining that my eye was drooping. I thought this was part of the recovery. He kept saying to come back for checkups. He kept saying this was not one of the reactions. I went to an ear, nose, and throat doctor, and he said he didn't know either.

My face was distorting. All I could see in the mirror was that I was getting uglier every day.

For six months, Elizabeth went from doctor to doctor. A couple of eye doctors said the condition might be sinus-related. Finally, Elizabeth went to see an internist for other symptoms, and he suspected Graves' disease.

In Elizabeth's case, the ophthalmologist did not consider that her initial eye symptoms could be caused by thyroid eye disease. In fact, the eye surgery could have worsened the eye problem. Any trauma to the eye, including surgical trauma, may exacerbate or even trigger the autoimmune reaction to the eye in a patient with preexisting thyroid eye disease and may make eye problems worse.

The Diverse Effects of Thyroid Eye Disease

The onset of eye symptoms may have numerous effects on how you perceive your overall health and on job performance, lifestyle, self-esteem, and even mood. Research published in the *Archives of Ophthalmology* showed that thyroid eye disease may cause patients to have increased inner tension, more depression, lack of vitality, confusion, fatigue, and anger.⁶ The impact on mood is worse if there are cosmetic changes, such as bulgy eyes. Elizabeth, for instance, had almost quit her architectural design job as a result of thyroid eye disease. Her eye disease manifested itself as a severe inflammation and bulging, but she did not suffer from eye muscle problems. Thus, she did not see double unless pressure in her eyes increased due to improper positioning of her head. Her suffering was due primarily to the swelling around the eyes and the pressure in her eyes, which affected her vision.

In some patients, thyroid eye disease does not cause inflammation or bulginess but primarily attacks the muscles that allow the eyes to move around smoothly. The resulting sudden onset of double vision is one of the most frightening manifestations of thyroid eye disease. The afflicted person may experience many difficulties during this time that will be compounded if doctors don't make a prompt diagnosis.

Mark, age fifty-four, had had a stable job for twenty-two years in the same company when he began suffering from anxiety, depression, and total turmoil in his life as a result of eye muscle malfunction. He did not experience any symptoms of swelling or inflammation around his eyes, however. Because double vision was the only symptom of an eye problem, physicians were searching for a neurological condition, and it took some time for the diagnosis of Graves' eye disease to be made.

Mark was unable to relax and began to experience sleeping problems. He became intolerant and irritable. His anger peaked when he realized he could not do simple things such as change a lightbulb or push a button. His wife said that he became a totally different person.

An ophthalmologist at a major medical school who saw Mark finally diagnosed the condition and initiated plans for treatment, which included eye muscle surgery and external radiation. Months later, Mark's functional ability returned.

Without adequate family support, patients with severe thyroid eye disease find it difficult to cope with the disease and its effects on functioning both at home and at work. Spouses and partners are often called on to play a major role in understanding the disease process and its treatment, as the person with the condition is frequently stressed by the situation and may not comprehend what the doctor is trying to explain. The spouse should be involved as much as possible in the case and, in turn, should reassure his or her

partner about the outcome. This will minimize the anger and mood swings generated by the effects of eye disease. These feelings, which are also symptoms of thyroid imbalance, are exaggerated when eye impairment or disfiguration from thyroid eye disease occurs.

More Questions than Answers

Once eye disease is diagnosed, the patient is usually faced with a situation in which answers may not be forthcoming because of uncertainty about the effectiveness of treatment and a lack of knowledge about the natural history of the disease. Many patients become frustrated and angry because they cannot get straightforward answers to such questions as:

- “What might happen later?”
- “Is it reversible?”
- “Could it be corrected totally without further damage to my eyes?”

Vanessa suffered from symptoms of thyroid eye disease for about six months before she was diagnosed. She had red, bulgy eyes and a fixed stare. After she was told that most of her eye problems were due to Graves' disease, Vanessa joined a thyroid support group to learn more about her condition. Her endocrinologist did not give her definite answers or provide her with literature describing outcomes and treatment options. The ophthalmologist to whom she was referred told her, “Let's wait and see.” Attending thyroid support meetings helped her cope better because she found out that she was not the only one dealing with this situation. She said:

Nobody seems to have answers. In the support group meetings, I meet a lot of people who have been misdiagnosed for a lot of years.

At first, before going to the support group, I was so bitter and angry. It's a disease to be angry at. It's like righteous justification. We should be angry for having to go through this. Some of the people I see are so disfigured it makes me want to cry. I say, “That could be me in a year or two.”

I think now I'm willing to fight, though I still don't understand this complicated disease. I now realize that I was not really in tune with my health until it became bad.

The lack of adequate and reassuring information contributed to Vanessa's anxiety when she saw other people disfigured from Graves' disease. Only after her endocrinologist explained to her that, in general, only a small percentage of people afflicted with thyroid eye disease reach a severe stage did she feel better. Vanessa said, “Talking with my husband and other

patients with Graves' disease helped me to cope better with this. Now I don't feel as awkward and different as before. Most of the time, I just feel that I have an eye disease, and I am hopeful it will get better."

Promising Treatments for Thyroid Eye Disease

Graves' patients view thyroid eye disease with dread, and unfortunately, some people afflicted with severe eye disease may find their personal and professional lives significantly affected and become depressed. Such patients can take comfort in the following information:

- Having Graves' disease and even thyroid eye disease does not necessarily mean that your eye condition will become severe, disfiguring, or disabling. In only 5 to 10 percent of patients with thyroid eye disease is the condition severe enough to warrant aggressive treatment interventions.
- Many patients with Graves'-disease-related eye changes will experience a spontaneous improvement or near resolution of those changes over time; only a small percentage (nearly 20 percent) may have worsening eye disease, and even then, it could subsequently improve on its own.⁷
- Generally speaking, from the time the eye disease begins, a worsening or progression of the eye symptoms may occur over a period of six to twenty-four months.⁸ After this initial period (often referred to as the hot phase), the eye symptoms often remain stable for a period of one to three years. Later, many patients experience a gradual improvement and often an incomplete resolution of the symptoms. For instance, one study showed that lid retraction disappeared in 60 percent of people several years after the beginning of the eye problems⁹ and that eye muscle problems improved in 38 percent of patients. Bulgy eyes, however, tend to persist: less than 10 percent of people with bulgy eyes will have an improvement in the condition without receiving treatment. This has to do with the increased amount of inflamed fat inside the orbit that cannot regress spontaneously.
- For those with significant eye changes, several treatments can improve or even correct the most severe eye effects. When such patients understand from the outset that the treatment process may be lengthy, it helps to minimize frustration, anger, and despair. It is also important for patients to be confident that treatments are available, not only to prevent loss of vision and to restore and maintain normal eye function but also to correct cosmetic disfigurement.¹⁰

For example, eyedrops that counteract the effect of the increased retraction of the eyelid are often quite helpful. Increasing the humidity in the home and in the work environment will help alleviate the dryness of the eyes caused by constant exposure to air and sunlight as a result of the retraction of the lid. Prisms can be used to correct double vision. It is helpful for patients to wear sunglasses when outdoors and to use artificial tears (methylcellulose 1 percent solution) during the day, as well as emollients to lubricate the eyes at bedtime. You also need to tape your eyelids at night to prevent dryness and exposure of the cornea. I often recommend that my patients elevate the head of their bed or use two or three pillows to reduce swelling and double vision upon awakening in the morning.

For upper eyelid retraction, cosmetic upper eyelid surgery, performed when the patient's thyroid imbalance has been corrected and normal thyroid function has stabilized, provides excellent results when done by well-trained specialists. This problem can also be treated with injection of botulinum toxin type A (Botox). Often, one single injection corrects the problem. This form of treatment seems to be safe and effective; however, rarely it causes double vision.¹¹ You can receive this treatment while waiting for a surgical procedure, such as orbital decompression or eye muscle surgery. Some patients also may require blepharoplasty, which is the removal of excessive amount of eyelid, or removal of orbital tissue that hangs out from the orbit.

For patients experiencing discomfort (a sensation of having sand or dirt in their eyes) and disfigurement from soft tissue inflammation around the eyes, a more aggressive treatment is needed. It consists of either a course of corticosteroid drugs, external radiation treatment to the orbits, or surgery to decrease the swelling in the orbits. An experienced ophthalmologist may recommend one or more of these treatments after performing a complete and thorough evaluation. In general, for patients having pain or severe inflammation around the eyes, a course of corticosteroids is the most effective form of treatment and is given initially as 60 to 80 milligrams of prednisone a day for two to four weeks. You may notice some benefits in the inflammation within one or two days. Then the dose can be gradually reduced by 2.5 to 10 milligrams each week over a period of several weeks if the eye symptoms do not flare up. You may need steroid treatment for a total of three to twelve months. The corticosteroids seldom improve the bulgy eyes or muscle problems, however, and are beneficial mostly in the active or "hot" phase of the eye disease. Another medication that can also be helpful is cyclosporine, with or without corticosteroids. However, steroids are by and large more effective than all other immunosuppressive medications, including cyclosporine.

Patients who experience worsening bulginess but no major inflammation

and those who have significant functional impairment of the eyes are generally treated with external radiation given in several sessions over two weeks. After external radiation, two-thirds of patients have a noticeable if not dramatic improvement in the soft tissue swelling.¹² The improvement is often noticeable as early as six weeks after treatment, and after three months, the eyes may be much less bulgy. Inflammation of the optic nerve also improves after external radiation. Although external radiation does not help with eye muscle dysfunction, it is often recommended before eye muscle surgery.

External radiation usually produces significant improvements and is especially helpful when the optic nerve is affected by the swelling. Some patients who are initially treated with corticosteroids but fail to improve may be given external radiation as well. Orbital radiation improves soft tissue changes in 80 percent of patients treated with this method. The best results are seen when corticosteroids and external radiation are used together. This combined treatment promotes a more rapid improvement in the swelling of soft tissue, eye muscle movements, and vision.¹³ However, radiation combined with corticosteroids does not improve the bulging. Corticosteroids and/or orbital radiation are best used when active inflammation exists.

Nearly one-third of patients who require corticosteroids, radiation, or both will also need some form of surgery, either decompression surgery, eyelid correction, or, eye muscle surgery. Surgery to remove portions of the bony walls of the orbit and decrease the pressure existing in the orbits may be recommended for cosmetic reasons or because vision is affected. The surgery improves bulginess of the eyes as well as vision. It will allow your cornea to be more protected and will help optic neuropathy. In fact, the surgery may be indicated even if you do not have bulgy eyes; optic neuropathy occurs more frequently in patients who do *not* have bulgy eyes simply because the pressure that builds up inside the orbits in such patients is much higher on the optic nerve. Orbital decompression surgery is performed when drugs and radiation have failed to achieve an improvement. In general, surgery is more effective when the activity of the disease has slowed down. When surgery is performed during the hot phase of the eye disease, it is more often complicated by double vision.¹⁴ An indication of activity of the eye disease is when there is inflammation and redness of the eyes. Make sure you stop smoking before having such procedures, since smoking negates the benefits of the surgery.¹⁵

Eye muscle surgery is delicate and may be needed if you have persistent double vision. Note that in general, orbital decompression should be done before muscle surgery because muscle surgery may cause swelling that worsens the bulginess of the eyes. Strabismus surgery will allow you to have single vision. This means that it will improve vision when you look straight ahead and when you read. However, after surgery, you may continue to have double

vision when you look to the side or upward. If you have this residual problem, it does not mean that the surgery is not considered successful.

Because of the lack of specific treatments to cure thyroid eye disease and completely eliminate the autoimmune attack on the eye, patients afflicted with thyroid eye disease continue to be treated with these unpleasant methods. The good news is that, by and large, these treatments achieve significant cosmetic and functional improvements. The assurance that help is available should serve to dispel much of the fear and anxiety that patients experience upon being diagnosed with thyroid eye disease.

How to Ensure the Best Possible Outcome

Patients with Graves' disease, with or without eye disease, often ask what they can do to prevent or stabilize their eye problems. The answer is that anything that either has been proved to affect eye changes or is justifiably suspected of affecting eye changes should be considered.

First, any thyroid imbalance should be corrected as promptly as possible. Researchers have clearly shown that thyroid imbalances promote a worsening of eye symptoms.¹⁶ Severe hyperthyroidism may be associated with a higher risk of having more severe eye disease. In addition, occurrence of hypothyroidism during the treatment of Graves' disease may cause a worsening of eye symptoms. Therefore, both thyroid specialists and patients must take care to ensure that normal thyroid function is maintained throughout the course of treatment, especially in those patients with more severe eye disease. A block-replace regimen, utilizing an antithyroid medication such as methimazole (which seems to have a beneficial effect on an autoimmune attack) in conjunction with levothyroxine (so that the patient has a stable, normal thyroid function) may help stabilize thyroid levels during the hot phase of thyroid eye disease. This regimen, administered for the first year to patients with moderate to severe eye disease, will help prevent the deleterious effects of a thyroid imbalance on the eye disease.

Second, for patients with significant eye disease, destroying a portion of the thyroid gland, by exposing it to radioactive iodine, should be avoided the first year until the eye disease is more stable. This is because radioactive iodine treatment can exacerbate the eye disease by enhancing the autoimmune attack on the tissue surrounding the eyes. Instead, it is advisable during this critical period to use an antithyroid medication to counteract the effect of hyperthyroidism and potentially diminish the autoimmune attack.

Even if you have mild eye disease, you may experience worsening eye changes after radioactive iodine treatment. Research has shown that among patients with minimal or no eye disease, 15 percent had appearance or worsening of eye disease two to six months following the radioactive iodine

treatment.¹⁷ Often, the eye changes that occur after radioactive iodine treatment are temporary. However, in some patients, the changes may persist. To prevent the worsening of eye disease, your doctor may prescribe prednisone for approximately three months. Corticosteroid treatment, in my opinion, is helpful if you had to be treated with radioactive iodine for your overactive thyroid and if you have significant eye disease but could not be treated with medications because of adverse effects, for example. In this situation, corticosteroids will prevent you from having a further worsening of the eye disease.¹⁸

As we saw in Chapter 2, stress is a major trigger of Graves' disease and of the autoimmune attack responsible for hyperthyroidism.¹⁹ Although not much has been written about the effect of stress on thyroid eye disease, it is inconceivable that stress could affect the thyroid condition but not the eyes. Extensive research suggests that the mechanism and the underlying trigger are the same for both eye disease and the thyroid condition. Thus, people with even minimal thyroid eye disease should learn as much as possible about how to cope with stress effectively. The thyroid condition and the eye disease, themselves sources of stress, may overburden the patients, who can then easily lose control due to worrying and functional impairment. Again, strong support is crucial to help patients cope with the stress. People afflicted with thyroid eye disease need to educate themselves quickly, and learning about the promising treatment options that are available should serve to reinforce their sense of optimism. Remember, a positive attitude can promote a successful outcome.

Research has shown that smoking may make thyroid eye disease worse.²⁰ The negative effects of smoking are primarily related to increased inflammation of the eye. Thyroid specialists and ophthalmologists urge patients with Graves' disease to quit smoking. Such an emphasis on the adverse effects of smoking generates a great deal of anxiety among Graves' disease patients. For those who cannot quit smoking while experiencing the effects of an overactive thyroid, I suggest wearing suitable glasses that can protect their eyes from the detrimental effects of smoke. As soon as thyroid levels become normal, every effort to stop smoking should be made.

Also, I highly recommend that you take plenty of vitamins and antioxidants. Many of them have been shown to support the immune system. In fact, as I indicated in Chapter 19, the use of antioxidants in conjunction with the antithyroid medication methimazole enhances the chances of remission of Graves' disease. Research has shown that intake of antioxidant agents resulted in improvement of mild to moderately severe thyroid eye disease.²¹

Despite the fact that we do not yet have a cure that entirely eliminates the root of thyroid eye disease, Graves' disease patients afflicted with eye problems need no longer resign themselves to despair and disability. A good un-

derstanding of their condition and the availability of effective treatments have changed the outlook for patients suffering from this condition. If you have thyroid eye disease and require treatment, ask your physician to refer you to an ophthalmologist with expertise in this field. You are likely to find the help you need in most institutions affiliated with medical schools.

- Severe eye problems occur in less than 20 percent of patients with Graves disease.
- Thyroid-related eye disease is the result of an immune attack on the structures surrounding the eyes, including fat and muscle. The immune attack can cause inflammation of the soft tissue, swelling of the fat that leads to protrusion of the eyes (exophthalmos), and inflammation and dysfunction of the eye muscles responsible for the movement of the eyes.
- Many patients have spontaneous improvement of their eye disease over time.
- Several treatments are currently available to correct cosmetic disfigurement, inflammation, exophthalmos, and eye-muscle problems.

THYROID CANCER

Curable but Anguishing

The frequency of thyroid cancer is increasing worldwide. Although thyroid cancer is less common than many other forms of cancer, the thyroid cancer rate has increased markedly in recent years. At this time, nearly 300,000 patients in the United States have thyroid cancer, and approximately 23,500 new cases are diagnosed each year.¹

In fact, in women, thyroid cancer is currently the eighth most common malignancy, and its incidence is increasing more rapidly than other cancers. It is unclear, however, why women are more often affected than men and why in older people the frequency of thyroid cancer among men and women becomes almost the same. Genes certainly play a role in the occurrence of thyroid cancer, but nutrition and environmental pollutants probably contribute to this dramatic increase over time. For instance, the routine practice between the 1920s and 1950s of treating various head and neck conditions with high doses of radiation has contributed to the occurrence of more thyroid cancer. Thyroid cancer has also been associated with radioactive fallout.² Also, thyroid cancer is now diagnosed more often than before because of more frequent exams and screening and because of routine use of thyroid ultrasound in medical practices.

When a physician tells a patient that he or she has a growth in the thyroid gland that could be cancer, the patient commonly reacts with fear, anxiety, and even shock. If the growth does turn out to be malignant, the patient experiences denial, anger, and depression typical of patients with many other types of cancer. Thyroid cancer, however, is one of the most curable cancers. In general, thyroid cancer spreads very little and is associated with a mortality of 3–5 percent. Some thyroid cancers, however, are highly invasive; these result in a mortality rate of 50 percent. In some cases, it may take years of repeated treatments to eradicate the cancer cells completely. Even after the

cancer is eradicated, people often go through lifelong monitoring, and some live with fears of recurrence.

For years, there has been no clear-cut consensus among physicians, even thyroid experts, about the best way to treat thyroid cancer. Thyroid cancer has been quite difficult to study, and the guidelines for treatment have been based primarily on retrospective studies. Only recently, fairly precise guidelines have been proposed by an American Thyroid Association task force that will help physicians follow similar treatment protocols when they care for their thyroid cancer patients.³

The Many Faces of Thyroid Cancer

Thyroid cancer comes in several forms, but the most common type is papillary cancer. This form of cancer is associated with the best outcome and accounts for 70 percent of all cases of thyroid cancer. Papillary cancer also tends to occur at a younger age. The other main variant of thyroid cancer is follicular cancer, which accounts for 20 to 25 percent of all cases of thyroid cancer. It is more aggressive than papillary cancer, and the outcome is in general worse. It tends to occur in older people. Hurthle cell cancer is one variety of follicular cancer and accounts for 3–4 percent of thyroid cancers. Hurthle cell cancer is quite often more aggressive and spreads to the neck lymph nodes early. Nearly one of three patients with this cancer already has lymph node spread and even spread in other organs, including the lungs and bone, at the time of diagnosis. Papillary and follicular thyroid cancers are what we call well-differentiated thyroid cancers. Well-differentiated thyroid cancer can be familial in almost 5 percent of cases.

Fortunately, poorly differentiated thyroid cancer (anaplastic cancer), which is one of the most aggressive malignancies, is very rare. The source of this type of cancer can be in some cases an untreated or poorly treated differentiated cancer. Nearly 5 percent of thyroid cancers are called medullary thyroid cancers. At times they are familial and can coexist with tumors of other endocrine glands (multiple endocrine neoplasia) such as the parathyroid gland and adrenal glands. Medullary thyroid cancer derives from a different type of thyroid cells called C cells. These cells produce a hormone called calcitonin, which is also used as a marker for these cancers.

Because anaplastic thyroid cancer and medullary thyroid cancer are much less common and require different treatment, I'll focus on the papillary and follicular types in this chapter. The treatments for these two types of cancer are in general the same. Surgical removal of the thyroid gland is the first and most important component of the treatment. The follicular type, however, requires more aggressive surgery and even lymph node dissection for better outcome. One of the main factors suggesting a better outcome is an

age of younger than forty years for men and younger than fifty years for women, even when the cancer has already spread.⁴ The outcome is generally better in children and adolescents,⁵ in women, and in people whose cancer is small at the time of diagnosis (less than 3 centimeters).⁶ After initial surgery, patients are often treated with radioactive iodine typically followed by regular whole-body scanning and measurement of thyroglobulin levels (a marker in the blood that helps to determine whether there is residual thyroid activity). An indication that the treatment has probably effectively inactivated the disease is a low thyroglobulin level and a negative scan during follow-up.⁷

Treatment with radioactive iodine is effective after surgical removal of the thyroid because thyroid cells selectively concentrate iodine in the thyroid. Doctors specializing in nuclear medicine formulate a liquid containing a form of iodine that is radioactive. The patient drinks this liquid, allowing the radioactive iodine to travel to the thyroid and kill any remaining active thyroid cells, normal or abnormal, including cancerous ones. Some patients may require more than one or two treatments to eradicate the cancer. Doctors often administer the treatment six to eight weeks after the initial surgery and repeat it once or several times, if necessary, at intervals of six months to a year.

Dealing with Lumps

Doctors usually diagnose thyroid cancer when the patient has a lump, or what doctors call a nodule. Sometimes the lump is noticeable on the neck, and sometimes doctors find it by touching (palpating) the thyroid gland. In many cases, the nodule may have been present for a long time before it is discovered. Most patients with thyroid nodules have no symptoms. However, some patients may have difficulty swallowing, hoarseness, or pressure or pain in the neck area. Physicians tend to overreassure patients whom they have diagnosed with thyroid nodules and thyroid cancer. Although expressions such as “Oh, if you had to get cancer, that’s the kind to have” or “Nobody dies of thyroid cancer. You’ll live forever, and you won’t have any problems” can be quite appropriate, they may cause the patient to be unconcerned about the condition, which could lead to unhappy surprises down the line.

Lumps in the thyroid that can be detected by a manual examination of the thyroid are very common and occur in as much as 3–7 percent of the population, with women being affected more often than men.⁸ Sometimes your physician feels a bulge on the thyroid and may suspect a thyroid nodule, but this bulge may be related to an area of localized inflammation (such as Hashimoto’s thyroiditis) rather than a true nodule. In this situation, an ultrasound of the thyroid will not identify a distinct nodule. The frequency of small nodules (less than 1 centimeter in diameter) is much higher than nod-

ules detected by palpation. More than 20 percent of people have small nodules. These nodules are detected by ultrasound and at times incidentally by a procedure such as a magnetic resonance imaging (MRI) or computerized tomography (CT) scan of the neck ordered for other reasons. Small nodules can be cancerous, too.

There are two basic types of nodules. Warm or hot nodules do not carry a significant risk of cancer, pick up significant amounts of iodine, and may even become autonomous from the rest of the thyroid gland and lead to hyperthyroidism over time. Cold nodules that do not pick up iodine appear as nonfunctioning areas on thyroid scans. They are often benign: only 10 to 15 percent of them are cancerous. Nearly 85 percent of all nodules are cold, and the remaining are warm or hot.

To evaluate patients with thyroid nodules, some physicians obtain a thyroid scan. Nowadays, however, doctors perform this procedure less frequently. Most order a TSH test instead. Only if the TSH level is low (indicating the possibility of a hot nodule) do they order a thyroid scan. If the TSH is normal, then doctors assume it is a cold nodule. Ultrasound of the thyroid can help in identifying lesions likely to be malignant. For instance, nodules that have a spherical shape are three times more likely to be cancerous.⁹ If the ultrasound of the thyroid shows calcifications or increased blood flow inside the nodule, the nodule is more likely to be malignant. However, the size of the nodule cannot help your doctor predict whether the nodule is cancerous or not.

To avoid performing surgery on everybody found to have a thyroid nodule, physicians recommend a procedure known as a fine-needle aspiration biopsy.¹⁰ Doctors withdraw cells via a very thin needle inserted into three to five places in the nodule. This helps to determine whether the nodule is benign or cancerous. The procedure can be done blindly, but increasingly it is performed with the help of an ultrasound machine to make sure that the needle is indeed within the nodule. If your nodule is smaller than 2.5 centimeters, using ultrasound guidance will give more conclusive results than doing a blind biopsy. In good hands, this procedure is quite reliable, but it is not foolproof, unfortunately.¹¹ As many as 20 to 30 percent of biopsies are inconclusive or fail to distinguish between benign and cancerous lesions. No consensus exists as to whether all patients with inconclusive biopsies should undergo surgery. Quite often, the physician explains the options and leaves the decision up to the patient. Research has shown that men with a follicular lesion larger than 3 centimeters have an 80 percent chance of having cancer, whereas women with small follicular lesions have a much lower risk.¹² To avoid unhappy surprises, however, it may be prudent to have surgery if the biopsy show a follicular lesion. One study published in the *American Journal*

of Surgery has shown that 42 percent of patients diagnosed with a follicular lesion on fine-needle aspiration biopsy turned out to have thyroid cancer when they underwent surgery.¹³ Also, to avoid unnecessary surgery it is wise to have a repeat fine-needle aspiration biopsy to confirm that the lesion is indeed a follicular tumor. Molecular markers to improve the accuracy of diagnosis for nodules that are indeterminate or inconclusive are being developed to help improve the accuracy of the procedure and may become routine practice in the future.

Rosa had just turned thirty-eight when, after a neck injury from an auto accident, she was incidentally found to have a nodule measuring 2 centimeters. The doctor performed a fine-needle biopsy, which indicated a follicular lesion. He told Rosa that although it could be cancer, the likelihood of its being malignant was not high and he could look at it again in one year. He also added, "If you want it removed, I can refer you to a surgeon. It's a personal choice. You need to decide whether you can live with it or whether to deal with it now."

Rosa had to make the decision. She said, "I was very scared, but I kept thinking that since this had been discovered, it must be a blessing in disguise. I kept going back and forth. One day I would think everything was going to be okay. Then I would have periods when I would get depressed and scared and think about my three-year-old daughter."

Rosa worried for many months. Then she came to see me for a second opinion. I recommended surgery, and the nodule turned out to be benign. She no longer worries about the possibility of having thyroid cancer. She had only one lobe of the thyroid removed, and I put her on thyroid hormone treatment to prevent an underactive thyroid and the growth of nodules in the future.

A treatment dilemma also often occurs when the nodule is small. Since these lumps are quite common and are usually benign, doctors do not recommend surgery or fine-needle aspiration biopsy. Your doctor may repeat the ultrasound six months to a year later, to see whether the nodule has grown. If the nodule increases in size and becomes larger than 1 centimeter, your doctor then will recommend a biopsy. Nevertheless, if you have a history of radiation when you were a child, if you have a family history of thyroid cancer, if your thyroid ultrasound shows suspicious features, or if you received total-body irradiation for bone marrow transplantation, you ought to have an ultrasound-guided biopsy if the nodule is 7–10 millimeters in diameter.

I have diagnosed papillary cancers in several patients who had small nodules (7 to 8 millimeters in size). Small cancers are common, and according to research, many remain small for a long time. If you have a papillary thyroid cancer smaller than 1 centimeter, your doctor may recommend removing just

the cancerous lobe, followed by thyroid hormone treatment. Some small cancers are aggressive, however, and some will come back if only half the gland is removed. Even if the cancer seems to be localized in the thyroid, lymph nodes might have been affected already. For this reason, I tend to recommend near-total thyroidectomies for small cancers.

Several factors indicate a heightened likelihood of cancer in patients diagnosed with thyroid nodules, regardless of their size:

- Nodules that grow over time
- Being male, since nodules by and large are more common in women
- Symptoms of hoarseness, difficulty swallowing, or spitting blood
- History of external radiation or exposure to radioactive fallout from nuclear accidents
- Family history of colon cancer or intestinal polyposis (genetic link)
- Family history of thyroid cancer

A common source of problems in diagnosing thyroid cancer is the lack of awareness that even if a person has a normal reading on the first fine-needle aspiration biopsy, the lesion may nonetheless contain cancer cells. Some 3 to 5 percent of people who have a benign reading on the initial biopsy turn out to have thyroid cancer down the line.¹⁴ For this reason, if you have a nodule that is diagnosed as benign by fine-needle aspiration biopsy, you need to have the nodule monitored by ultrasound on a regular basis down the road, to make sure the nodule has not increased in size. Also, it is safer to have a repeat biopsy a few months later even if the nodule has not increased in size. The repeat biopsy is unfortunately not done routinely, and some patients may continue to harbor their malignancy for years before thyroid cancer is diagnosed and the gland is finally removed. You will also need a repeat biopsy if the first one is nondiagnostic, meaning that not enough cells were collected to provide precise information on the nodule. If the repeat biopsy is still unrevealing, surgery will be the best decision. Surgery is also indicated when biopsies are benign but the nodule continues to grow.

Andrea went to see her internist because of a bad sore throat. He discovered a lump in her thyroid and referred her to an endocrinologist, who performed a fine-needle aspiration biopsy of the growth. Andrea was reassured that the nodule was benign. She began thyroid hormone treatment, which can reduce the size of the nodule in some patients, and thought this was the end of her trouble. Almost three years later, she saw another endocrinologist because she had gained weight and had heard that thyroid malfunctions can cause weight gain. This doctor recommended that she have her thyroid gland surgically removed. While recuperating from the operation, Andrea was advised that she had thyroid cancer in the nodule. It was of the papillary type.

Andrea became very upset and overwhelmed by the news. She could not believe that the nodule had been detected nearly three years ago and that she had been assured it was benign. After further treatment of her cancer with a single dose of radioactive iodine, Andrea was cured, and she has done well since. The lesson here is that if you are told your thyroid nodule is benign, have your doctor repeat the biopsy six months later.

If you are pregnant and the biopsy reading is suspicious or is indicative of thyroid cancer, removal of the thyroid should be done before the twenty-fourth week of pregnancy to minimize the risk of miscarriage. If the nodule has been discovered in the second half of pregnancy, it is better to postpone surgery until after delivery.¹⁵

Before undergoing thyroid surgery for thyroid cancer, you need to make sure that an ultrasound of the neck is performed to determine whether you have any lymph node spread. This very important information will guide your surgeon as to whether lymph nodes in your neck should be removed. Research has shown that differentiated thyroid cancer spreads to the neck lymph nodes in approximately 20–50 percent of patients.¹⁶ Even if the tumor is small and appears to be localized in the thyroid gland, the cancer might have already spread to the lymph nodes.¹⁷

In addition to the neck ultrasound, you need to have a thyroglobulin level measured before the surgery. A high thyroglobulin level is actually a good sign, because often it implies that you will respond better to radioactive iodine treatment.

Not All Doctors Treat Benign Thyroid Nodules the Same Way

Some doctors recommend thyroid hormone treatment to suppress or reduce TSH levels in order to make a nodule shrink after the fine-needle aspiration biopsy has shown that the lump is benign. Research shows that this treatment is effective in 17 percent of patients, and slows down further growth in 10 percent.¹⁸ Many benign nodules can eventually shrink without any treatment. Thyroid hormone treatment does seem to prevent other nodules from growing, but to achieve this beneficial effect, the thyroid hormone treatment is likely to cause an excess of thyroid hormone in your system, which can affect your bones, heart, mood, and emotions. For this reason, I seldom recommend thyroid hormone treatment for benign nodules. If a nodule grows and raises concern, surgery may be the best route.

If your doctor has elected to prescribe thyroid hormone treatment to suppress the thyroid nodule, make sure that the dose used is the lowest that

will keep your TSH at a level of 0.4 to 0.6 milli-international units per liter. This low-level suppression produces the same result in terms of nodule size as if you used a much higher dose.¹⁹ You need to know, however, that if you are menopausal, thyroid hormone suppressive treatment provides little benefit with respect to reducing nodule size.²⁰

An Emotional and Physical Roller Coaster

Doctors diagnosed Louise with thyroid cancer three to four years after she had been diagnosed with hypothyroidism. She was taking thyroid hormone replacement for her hypothyroidism when, during her yearly follow-up visit with her endocrinologist, he told her that she had a lump. According to Louise, "He said, 'I don't think it is anything—no big deal.' He was going on vacation and said that, when he came back, he would do an ultrasound." Louise asked the endocrinologist to do the ultrasound before he went on vacation. "He did the ultrasound, and he started calling it a nodule. Then he said, 'When I come back from vacation, I'll do a fine-needle aspiration biopsy, and we'll see what it is.' "

Louise was very disturbed by her endocrinologist's apparently casual attitude and went to see an endocrinologist recommended by a friend. The second endocrinologist did a fine-needle aspiration biopsy and advised her that the nodule was benign. He increased her dose of thyroid hormone to suppress the nodule.

One year later, Louise moved to a different city, where another endocrinologist repeated the fine-needle aspiration biopsy. The next day, the endocrinologist called to tell her that cancer had been found and she required surgery.

Louise rushed to see a surgeon, who told her she needed to have her thyroid removed but also reassured her that everything would be fine. When the surgery was completed, the surgeon came out and told her mother and husband that the nodule was benign and that he had therefore removed only one lobe of the thyroid gland. He said this happens quite often. Louise was told the good news in the recovery room. Louise and her family all felt as if a weight had been lifted from their shoulders.

Thirty minutes later, the surgeon came back and wanted to speak to Louise's husband. He explained to him that when the pathologist had actually dissected the tumor, he found another tumor, which was malignant. By the time this was discovered, Louise had already been sewn up.

The surgeon reassured Louise that because the tumor was not very big, there was nothing to worry about and for all intents and purposes she was cured. He did not recommend radiation. He basically said she was fine and told her to go home. Because of what had happened to her, Louise's

happiness was tempered by a little suspicion. “How could you go from telling me it was malignant to telling me it was benign and now saying that it is malignant but go home, you’re fine?”

A few weeks later, Louise had her internist request the slides and send them to a teaching institution for a second opinion. The results of the interpretation were rather different from the original one. The second opinion indicated multifocal cancer—multiple areas of cancer in the thyroid. (When thyroid cancer is multifocal, it often requires more aggressive treatment.) This was even more confusing. Now Louise completely lost faith in the physicians taking care of her.

When Louise came to see me, I recommended surgical removal of the remaining lobe, which, sure enough, turned out to be cancerous. Louise was devastated by the news. Her fears mounted, and she became overtly depressed. She said:

It was an emotional and physical roller coaster. Sometimes I think I’m lucky that I can still remember my name after all this. You think you’re losing your mind at times. I’m very upset that my condition wasn’t dealt with properly in the first place. I feel like this whole thing has been a nightmare. I’m always going to live with that memory. I don’t know that you are ever cured from all of this.

After the second surgery, I followed Louise’s progress closely. Each year for four consecutive years, I administered radioactive iodine treatment. This treatment finally cured her cancer.

The scenario just described is typical for many thyroid cancer patients. Although sometimes their treatment is hampered by differences of opinion, most often it is hampered by lack of knowledge and expertise on the part of some physicians who care for these patients.

Who Should Care for Your Thyroid Cancer?

Oncologists (cancer specialists) typically do not have an adequate handle on the management of thyroid cancer. In fact, most oncologists are seldom called on to manage thyroid cancer since chemotherapy has no role in its treatment. Some mainstream endocrinologists do not have much experience with managing thyroid cancer patients either. Unless they work in a referral center or in a setting where they are exposed to many patients with thyroid cancer, they often offer stereotypical recommendations that may or may not be applicable and appropriate for an individual patient.

Furthermore, thyroid surgery is delicate and difficult to perform. The surgeon chosen to do the procedure must be sufficiently experienced with thy-

roid surgery and have adequate knowledge about the management of thyroid cancer. The surgeon needs to work closely with the referring endocrinologist to plan an optimal treatment. If this does not occur, mismanagement or a delay in appropriate therapy may result.

Some nuclear medicine doctors tend to take over the care of thyroid cancer patients because they deal with this condition more frequently than mainstream endocrinologists. However, they lack the experience and expertise about pathological types that would enable them to make specific recommendations for individual cases.

A surgeon referred one patient I know with thyroid cancer to a nuclear medicine doctor to continue her care. The nuclear medicine doctor directed the radioactive iodine treatment and the administration of thyroid hormone. Two years later, this patient turned out to have a substantial amount of thyroid cancer in her neck area. She had suffered from many symptoms of thyroid hormone excess as well. The nuclear medicine doctor simply does not know how to fully evaluate and treat patients with thyroid cancer.

Patients diagnosed with thyroid cancer should therefore do a meticulous search for an endocrinologist who specializes in thyroid diseases and who has had a great deal of experience with managing thyroid cancer. The endocrinologist who takes on the care of a patient with thyroid cancer should closely monitor the treatments given by other specialists. Thus, he or she should be the main coordinator of the various therapies and interventions performed on the patient, such as:

- Surgery, including the extent of the procedure (whether to remove all or part of the thyroid)
- The appropriateness of the pathology report
- Recommending second opinions based on reading the pathology slides from thyroid specimens
- Interacting with radiation therapists if external radiation is recommended
- Interacting with the nuclear medicine doctor

It is especially critical for the endocrinologist and the surgeon who is performing the initial surgery to coordinate their efforts. If this does not happen, a great deal of mismanagement may occur. This could lead to significant suffering, anxiety, and frustration and might prolong the course of the cancer.

Vera's case illustrates how a lack of communication between the endocrinologist and the surgeon may be responsible for serious management prob-

lems and subsequent suffering. Vera was in tears when she came all the way from New Mexico to see me and tell her story. She said:

When I felt a big bulge in my neck, I went to a doctor, who sent me to an endocrinologist. He said that it needed to be operated on because it could be cancer. I went right away to surgery. I didn't know at the time that thyroid cancer is very curable. I worried a lot and cried all the time. I was afraid to be alone dealing with this. I was depressed because I thought I was going to die, and I still think I might die. I always think that the only thing I want is to live long enough to have my son reach eighteen before I go.

When they took me out of the recovery area to my room, my husband told me it was cancer. The surgeon came to talk to me and informed me that he took only the lobe where the cancer was and he hadn't removed the whole thyroid. I couldn't understand why. I did not know whether the surgeon had a lot of experience with thyroid surgery, but the endocrinologist told me that the surgeon was good.

Vera's voice was hoarse due to a vocal cord injury from the surgery, and she started crying when I told her that she needed to have the other lobe of the thyroid removed. After the second surgery, which showed involvement of the other lobe and of the lymph nodes, Vera received several whole-body scans six to twelve months apart to see whether there were any residual complications. Each time, she required a high-dose radioactive iodine treatment.

A sizable thyroid cancer (larger than 1 centimeter) should be treated by having the thyroid gland completely removed by a skilled surgeon who has performed numerous thyroid surgeries. Currently, some surgeons are performing such surgery on an outpatient basis, although there is controversy over whether outpatient thyroid surgery is safe.²¹ The surgery may be difficult and may involve complications such as damage to the nerve that controls speech and voice. Surgeons can also damage or inadvertently remove the parathyroid glands, which are located behind the thyroid gland and help to control calcium and phosphorus levels in the body. A person who suffers severe damage to or removal of the parathyroid glands will experience low calcium problems that may require lifelong treatment with calcium and vitamin D. The most common symptoms of low calcium levels are tingling and numbness around the mouth and fingers as well as muscle spasms affecting the hands. Therefore, to avoid adverse outcomes, have your endocrinologist refer you to a surgeon who has had a lot of experience with thyroid surgery.

Again, it is important to ask about the surgeon's track record. The surgeon should have done at least ten to fifteen thyroid surgeries a year for two to three consecutive years.

Preparing for the Radioactive Iodine Treatment

After a surgeon performs a total thyroidectomy, most of the time he or she will schedule six to eight weeks later a scan of your entire body using radioactive iodine. After the surgery you no longer have a functioning thyroid gland, and during the intervening six to eight weeks you are allowed to become hypothyroid on purpose so that your TSH becomes higher than 40 milli-international units per liter. It takes that long for thyroid hormones to drop to very low levels. A high TSH is necessary because it makes the thyroid cells (normal or cancerous) pick up the maximum amount of radioactive iodine, which will destroy them.

For the few weeks that you are hypothyroid, you are likely to experience numerous physical and emotional symptoms. Many patients become depressed and quickly start observing strange things happening to their body. They feel out of control or become angry and irritated about trivial things, upset at the whole world. Patients frequently do not want to go out and do not want to see or be seen by others. Their anger is generated both by the thyroid hormone deficit in the brain and by the rapid transformation of their bodies, which alters their self-esteem and their normal functioning.

Danielle, age thirty-four, had a thyroidectomy and was told to return for the scan six weeks later. For a while, she felt nothing happening, and then, all of a sudden, she became a different person. Here's how she described the experience:

It is like you are floating above your body and mind. You have no control over them, and it is frightening. I hate the physical changes that happened so quickly. All of a sudden, my face puffed up, and I gained lots of weight. I became lethargic. There was nothing in the world that was worse than looking into a mirror and seeing the change that happened to my face. It is like the mirror tells you what is happening on the inside of your body.

It was a depressing feeling. Everything is happening to you, but there is nothing you can do to change it.

Michael, another patient with thyroid cancer, described his first experience with sudden hypothyroidism. The physical effects were so overwhelming that he had to rely on his wife to supervise his business operations. "Over the two-month period after the surgery," he said, "I started putting on weight. My motorcycle helmet no longer fit my head because it was so swollen. My eyes were so swollen I couldn't put my contacts in. My ring

finger started to swell, and it took me an hour of soaking to get a ring off. None of my clothes fit. My shoes didn't fit. These little things are really what aggravated me."

To minimize the torture of rapid hypothyroidism, I typically prescribe Cytomel (T3) for the first two to three weeks after surgery. I then stop the Cytomel for the next three weeks. After the Cytomel is stopped, the TSH rises to the desired level (in excess of 40 milli-international units per liter), and you will be ready for the scan and treatment. To avoid an imbalance of long duration, start taking Cytomel on day three after surgery at a dose of 5 micrograms three times a day for one week. Then increase the dose to 12 micrograms twice a day if you weigh less than 115 pounds, if you are older than fifty-five, or if you have a history of heart disease. Otherwise, increase the dose to 10 micrograms three times a day for two more weeks and then stop the Cytomel. While taking T3, you will continue to function normally and may not experience any symptoms. After stopping the Cytomel, however, you may feel the annoying symptoms of hypothyroidism.

As soon as you stop the T3, or one to two weeks before radioactive iodine treatment, I recommend that you follow a special diet consisting of low-iodine foods. (The section entitled "Iodine: A Double-Edged Sword" in Chapter 19 lists iodine-rich foods and nutrients, which you should avoid during this period.) You need to avoid all dairy products, luncheon meats, bacon, sausage, fish and seafood, egg noodles, egg yolk, pastry, cookies, dressings, ketchup, crackers, pretzels, chips, and all canned foods. During this period, you can consume small portions of chicken, turkey, and veal. Fresh potatoes, pasta, rice, fresh fruits, egg white, and fresh vegetables (except spinach) are also low in iodine. Make sure that what you eat is not salted and read the labels of everything you consume, including vitamin supplements. Iodinated material for imaging (CT scan, cardiac catheterization) should be avoided if you are planning radioactive iodine treatment because that can lead to iodine oversupply in your system for several weeks.

Continue this low-iodine diet until one week after you have received the radioactive iodine treatment. Depriving your system of iodine makes any remaining thyroid cells "hungry" for the iodine you will receive from the radioactive iodine treatment, which increases the likelihood of your being cured with just one radioactive iodine treatment.

A low-iodine diet will also make you consume less salt, which will reduce the swelling and fluid retention likely to occur when you become rapidly hypothyroid. The diet should be low in saturated fat to prevent your body from storing a lot of fat when you are made hypothyroid. During the three-week period, avoid drinking alcohol and taking sedatives. Be aware that

problems with focus and alertness may affect your ability to drive safely. Inform your supervisor at work about the effects of rapid hypothyroidism. If possible, avoid going through this period of forced hypothyroidism during the holidays, as it may make you more depressed.

After you have been hypothyroid for three weeks, your doctor will order a TSH test. If your TSH level is high enough, you will be given a small amount of radioactive iodine for the scan. A nuclear medicine doctor will take pictures of your neck area and the rest of your body forty-eight hours later. After the scan, you likely will be admitted to a hospital to receive the radioactive iodine treatment. Some nuclear medicine doctors, however, have begun to treat patients with radioactive iodine on an outpatient basis. These patients are instructed to follow precautionary measures for a few days after the treatment to minimize exposure of family, friends, and others to radiation.

- The Loneliness of Radioactive Iodine Treatment

People who are scheduled to receive radioactive iodine treatment are seldom given an adequate description beforehand of what they will experience. Emily remembers thinking:

Nobody really educated me about the radiation. I always think how it is interesting that, when it is thyroid cancer, everybody thinks, "It's no big deal because people don't die from it, and if I had to choose cancer, that is what I would choose." I look at them, and I say, "Sorry, but I would choose no cancer." Cancer is cancer. The anxiety that comes with the treatment is significant. While everybody really minimizes the effect of thyroid cancer, I think a lot of things would have been better if I had just really dealt with having cancer.

Physicians frequently tend to forget that these patients are profoundly hypothyroid when they return for the scan and treatment. Their perception of their surroundings is often distorted. The slightest thing can become a source of fear and apprehension. While receiving the treatment, they feel alienated when they are isolated in a room. Many patients wonder why everybody is so cautious about handling the radioactive solution, wearing gloves—and they have to drink it!

The first time Emily was hospitalized for radioactive iodine treatment, she found the experience doubly frightening because she had not been given an adequate description of what was about to occur. She knew that the liquid was radioactive and that there were good reasons for the precautions taken by the medical personnel. Emily said:

They made my husband stand out in the hallway, and I was the only person in the room. They put all this paper around. I couldn't walk on the floor, only on special material taped to it. I put on a gown, and they came with this cart and little bottles protected by iron. I wondered, "What is this going to do? Is it going to kill me? I wonder if somebody has checked if it's the right amount." They measured in the room, because you don't want to have a mistake. I saw all these precautions with the radioactive iodine material. The person who was handling it looked like an outer-space alien. I was told, "Drink this. Just touch the edge of the cup!" I started crying, and I was really scared. I thought, "You want me to take this, and all you guys are out there and you're wearing all these gloves. What is happening to me?" I was hysterical. The nuclear medicine doctor was standing outside saying, "Don't cry, Emily, just drink it." I kept thinking, "I'm not sure this is what I want to do!" But then I kept thinking, "Do I want to have cancer? Do I want to stay hypothyroid?" No, so I took it.

They served food on disposable plates with disposable utensils. Everything that the patient touches has to be thrown away. You have to flush the toilet three times after you use it. You have to drink lots of water to go to the bathroom and take several showers to wash the radioactivity off your body.

I felt like some type of alien plagued with an unknown disease. This really depressed me. My mental state worsened when I was informed I could not be near my son, nor could he hug and kiss me for five days. This was probably the hardest part.

The Aftermath of Radiation Treatment

Once you have received a radioactive iodine treatment, you will be given thyroid hormone. You will gradually regain your physical health, and your mood will gradually improve. It takes about two weeks, however, before you feel a significant improvement and about three to four weeks for you to return to the way you were feeling.

To speed up your recovery from the hypothyroidism, you can start taking thyroid hormone the day after radioactive iodine treatment. For patients suffering from severe symptoms, I include in the treatment 5 micrograms of T3 three times a day for ten days to further accelerate their recovery.

Some patients treated with radioactive iodine experience symptoms in the neck area, such as sore throat, swelling in the throat, or pain and tenderness in the neck. These symptoms occur primarily after the first radioactive iodine treatment and mostly in those who did not have their thyroid gland completely removed surgically.²² A nonsteroidal anti-inflammatory medication such as ibuprofen will help these symptoms. Many thyroid specialists re-

quest that the nuclear medicine doctor take a picture of the whole body a few days after the treatment (a post-treatment scan). You will not be asked to take more radioactive iodine for the scan. Since the amount of radioactive iodine that you receive for the treatment is much higher than the dose used for a regular scan, the post-treatment scan may show more areas of thyroid activity in your neck or other parts of your body. The results of this scan will be used as a baseline so that future scans can be compared to this one and the effects of the treatment can be thoroughly assessed.

After radioactive iodine treatment, 20–70 percent of women stop having menstrual periods or have fewer menstrual periods than normal.²³ Radioactive iodine can also cause damage to the ovaries, so you may become menopausal earlier than expected.²⁴

Infertility, miscarriage, and fetal malformations have not been shown to increase after radioactive iodine treatments. However, you are at risk for having a miscarriage if you become pregnant during the following year.²⁵ In men, radioactive iodine treatment causes the sperm count to go down but does not cause long-term male infertility.²⁶ If you have been breast-feeding, you need to postpone the radioactive iodine treatment for at least six to eight weeks after you stop nursing. If not, radioactivity will accumulate in the breast area and could promote breast cancer.

Radioactive iodine treatment can promote several complications, including salivary gland damage and tear duct obstruction.²⁷ You may lose your sense of taste temporarily, or it may change. Radiation salivary gland damage occurs in 5–40 percent of patients, while tear duct obstruction occurs in 2–5 percent of patients. If you have ongoing salivary gland damage that has resulted in dry mouth and dental caries, cholinergic medications may improve the flow of saliva. There is a controversy as to whether sucking on lemons after the radioactive iodine treatment reduces the risk of having salivary gland problems. If you have an obstruction of the tear duct causing persistent excess of tearing, you may need surgery to correct the problem. The increased tearing occurs because the duct that allows the tears to be cleared through the nose becomes clogged. More serious problems that can occur as a result of radioactive iodine treatment are the occurrence of leukemia or cancer of the small intestine, colon, salivary gland, bladder,²⁸ and possibly breast.²⁹ The higher the cumulative dose of radioactive iodine, the greater the patient's risk of being afflicted with leukemia or other cancers.³⁰ These long-term complications occur in one of three hundred patients who have received a total radioactivity exceeding 500 millicuries. The use of a laxative for a few days after the radioactive iodine treatment, to clear the radioactivity from the gastrointestinal tract, may help reduce the risk of colon cancer.

The Need for Continued Monitoring

After the radioiodine treatment, your doctor will give you doses of thyroid hormone slightly higher than what you would need to have normal thyroid levels. The purpose is to decrease the TSH levels to below normal, because TSH is known to stimulate thyroid cancer cells and may promote a recurrence of the cancer. Some doctors, however, prescribe a thyroid hormone dose much higher than needed to produce this effect, and many patients end up suffering from symptoms of hyperthyroidism.

Depending on how aggressive and large the original tumor was, you will be asked to have a repeat scan six months or a year later. At that time, you will be asked to stop the thyroxine, and you will be made hypothyroid for another whole-body scan, as you were the first time. As you did before the first treatment, use T3 for three weeks so that you are off thyroid hormone for no more than three weeks. Follow the same dietary guidelines as for the first treatment. Your doctor also measures your thyroglobulin levels when you are off thyroid hormone to decide whether another treatment is needed. After surgical removal of the thyroid gland, your thyroglobulin level should be monitored every six to twelve months. If your thyroglobulin remains greater than 2 nanograms per milliliter or the levels become gradually higher over time, this may indicate a recurrence or spread of the disease in the lungs or other organs. In this case, radioactive iodine treatment is often recommended even if the whole-body scan is negative. If the whole-body scan performed six to seven days after the radioactive iodine treatment is also negative, your doctor will obtain a PET scan to search for the spread. You may benefit from external-beam radiation, chemotherapy, radiofrequency ablation, or chemoembolization if the imaging procedure visualizes a spread in the lungs or other organs.

The monitoring process is repeated yearly until thyroglobulin levels have become low and the scan has become negative. Thyroid cancer patients may suffer significantly from anxiety produced by the severe, rapid, and profoundly acute hypothyroidism that results from stopping thyroid hormone treatment. This is often compounded by the considerable anxiety they experience while waiting for the result of the whole-body scan. Overall, it is a dreadful experience.

"The first time you do it, you don't know any better," said one patient about her experiences with becoming acutely hypothyroid. "You are dumb, and you don't know what is going to happen. The second time, you are really nervous, and the third time, you are almost suicidal because you know what is about to happen."

An alternative to having you stop thyroid hormone before a scan is for

your doctor to use Thyrogen (recombinant TSH), injected in the muscle, to obtain high TSH levels. This will produce more or less the same result as becoming hypothyroid,³¹ allowing maximal uptake of radioactive iodine by thyroid cells without your having to stop thyroid hormone treatment. You need to know, however, that a scan performed after injection of Thyrogen may not always reveal activity that would have been detected by a scan obtained after stopping thyroid medication. Additionally, low thyroglobulin levels while you are being treated with thyroid hormone do not necessarily mean that you do not have residual thyroid cancer in your neck or lungs. For this reason, thyroglobulin is measured after Thyrogen injections. If after injections of Thyrogen the scan shows abnormal uptake and/or your thyroglobulin level goes up above 2 nanograms per milliliter, you will then have to stop taking thyroid hormone, as you did the first time, to receive another radioactive iodine treatment. If you are a low-risk patient, your doctor may monitor you by just measuring your thyroglobulin level after Thyrogen injection and not performing a scan.

If your thyroglobulin level goes above 2 nanograms per milliliter after stimulation with Thyrogen, you are likely to have residual thyroid cells even if the whole-body scan is completely negative. In fact, thyroglobulin after Thyrogen is more useful for detecting persistent disease than the scan. One study showed that of 107 patients who were thought to be cured of thyroid cancer, 10 percent had persistent cancer detected by thyroglobulin levels that were measured after recombinant TSH.³² Analysis of research showed that nearly one of five patients who had no evidence of tumor and whose thyroglobulin levels were low while they were receiving thyroid hormone suppressive treatment actually had a rise in their thyroglobulin to more than 2 nanograms per milliliter after injection with Thyrogen. Nearly one-third of these patients had cancer spread.³³ When your doctor reviews both the thyroglobulin level after injection of Thyrogen and the results of the scan, however, the risk of overlooking persistent or recurrent disease becomes slim. Thyrogen can cause nausea and other minor side effects, such as headaches, tiredness, and, rarely, fever and flu-like symptoms.

If your thyroglobulin level is high but the whole-body scan is negative, neck ultrasound is the first step to evaluate the possibility of recurrent or residual disease. It will determine whether you have cervical lymph node involvement. A chest CT scan and a PET (imaging fluorodeoxyglucose) scan can be used to identify the source of the thyroglobulin. If suspicious lymph nodes are seen, often a fine-needle aspiration biopsy can confirm the spread.

Now Thyrogen is also used for the purpose of radioactive iodine treatment without stopping thyroid hormone medication.

Your doctor will also monitor your cancer with a neck ultrasound. Neck ultrasound is particularly useful in detecting early lymph node spread. This will guide your doctor in implementing other treatments, including additional surgery or external radiation.

Luckily, thyroid cancer is often curable. But because it can come back, you need to have your doctor periodically order the right tests even when you seem to be cured. For patients who do have a progressive growth of cancer, new treatments are being developed and research is expanding to include oncogene inhibitors. Other treatments being developed are modulators of growth, modulators of the immune system, and gene therapy.³⁴

The Power of a Good Support System

Some patients with thyroid cancer may require several treatments with radioactive iodine and even external radiation (which will be prescribed when there is lymph node involvement or recurrence in the neck). Despite several treatments, a few patients may continue to have cancer. Because the radioactive iodine treatments are given only once or twice a year, some patients agonize over their outcome for an entire year before getting an answer about whether the scan is still positive and whether they will need another radioiodine treatment. The emotional issues relating to the cancer, including anxiety and anger, are often exacerbated by the depression caused by stopping the thyroid medication.

Kelly, who has continued to have some residual thyroid tissue uptake in the neck despite three radioactive iodine treatments, had become slightly depressed because her cancer was not yet cured. When she was taking the thyroid hormone, she was able to work and function, and she tried to lead a normal life. She tried not to dwell on her cancer. She still had fears but kept herself busy. Whenever she stopped taking the medication, however, she began a journey into depression and misery.

In one of her office visits, she told me, "I hope and pray that my previous radioactive iodine treatments have taken care of the problem and I do not have to go through this protocol again. I just wish I could run away. I think I still have cancer and I am going to die. I don't want to leave my children. That's what bothers me the most. When I'm hypothyroid, I feel it is overwhelming." This is the period when thyroid cancer patients experience the most intense feelings and when they need a great deal of support from family and friends.

In addition to support from family members (who should educate themselves about the disease), having close friends pray for you and with you can

help. Positive thinking is very important. Support groups can be of tremendous benefit. Rather than joining groups dealing with cancer in general, however, it is much more beneficial to interact with people who have had thyroid cancer.

For family members, a support group of their own, where spouses and close relatives or their partners who have to live with thyroid cancer patients can talk to each other is helpful. Spouses should understand that changes in personality are normal and should be expected. A supportive spouse may periodically say, "Remember, what you're going through right now is what most people dealing with thyroid cancer experience. The book says so. We're going to make it through this. There are only X number of days until the scan, and then you'll get back on your medication."

I cannot overemphasize the need for verbal support. Rapid and profound hypothyroidism renders patients more withdrawn. They want to be with someone who can anticipate their needs and understand that they require a lot of support. Afflicted people lack patience, lose control, and don't feel well. Emotions get stronger, emotional needs become greater, and patients realize their vulnerability. They tend to reach out more. It is understandable that a spouse unfamiliar with the mental and physical consequences of acute hypothyroidism may not handle the impatience and anger very well.

In general, thyroid cancer has a high cure rate, and the outcome is good, although, in some cases, the treatment may be lengthy. For everyone diagnosed with thyroid cancer, the follow-up period is indefinite. Understanding the general principles of treatment and knowing and understanding the basis for the mental suffering that could come with it will undoubtedly help you to cope better with this condition.

Important Points to Remember

- Although thyroid cancer is one of the most curable cancers, it can cause significant worries, and years of repeated treatments may be required to completely eradicate it.
- Physicians have not yet developed a consensus about the best way to treat thyroid cancer.
- The two main forms of thyroid cancer are papillary cancer, which tends to be associated with the best outcome, and follicular cancer, which is more aggressive.
- Thyroid cancer patients should find an endocrinologist who specializes in thyroid diseases and who has had a great deal of experience in managing thyroid cancer.

- Patients need to be well informed about the nature of radioiodine treatment and how they might react to it before they are scheduled to receive the treatment.
- Thyroid cancer can return even after apparently successful treatment, so patients should ask their doctors to test for it periodically.
- Putting together a powerful support team of family members and close friends can help your recovery immensely.

EIGHT STEPS FOR THE FUTURE

How to Promote a Better Understanding of Thyroid, Mind, and Mood

Most people who seek medical help and are trying to feel better have no idea whether their physicians have a thorough knowledge of the complex field of thyroid disease. What really matters to patients is whether they feel better. They rightly expect that their physician will find the reason for the way they feel and correct it. Yet too many physicians do not recognize thyroid disease or know how to treat it or how to deal with the lingering effects of thyroid imbalance.

There is a critical need for the medical community to assess and revise its standards of care for thyroid patients and to better appreciate the effects of subtle thyroid abnormalities on overall health and emotions. The general public and people with thyroid imbalances also need to promote better overall care of the thyroid. How can all this be accomplished? Here are some suggestions for how you can begin to improve the quality of your care.

Educate yourself about your own thyroid. When patients become more knowledgeable, they can work with their physicians and become partners in their treatment and healing. Like other people with complex illnesses, many thyroid patients feel at the mercy of the medical system. Some patients suffering from a thyroid imbalance may see an endless parade of endocrinologists, nuclear medicine physicians, cardiologists, and other specialists. Ask your doctor to provide you with information during your office visits or how to obtain the information you need. Some of the information you find on the Internet is helpful, but in some instances it is not quite accurate. Many patients feel that they are shuffled along to the next specialist because of their multiple symptoms, which are in fact all related to the thyroid condition. It is especially important for you to understand the nature of symptoms such as anxiety and depression and how to cope with them. If you do, you will be less likely to be frightened by these symptoms if they return. By educating

yourself through talking with other thyroid patients, reading books, and joining thyroid patient support groups, you can more fully understand the challenges you face in healing your disease.

Talk openly with your doctor about your experiences, symptoms, and treatments. Clear communication between you and your health care providers is priceless for successful treatment. You also want to make sure that your endocrinologist and primary care physician, as well as any social workers, psychiatrists, and other health care professionals involved in your care, also talk to each other. All health care providers treating you should discuss your problems to ensure that everyone understands your diagnosis and treatment.

If your spouse, partner, family member, or loved one has a thyroid condition, become better informed about the condition and more closely involved in its treatment. In my experience, thyroid patients who develop a good support system through family, friends, and coworkers cope much better.

For those who are newly diagnosed, family therapy and couple therapy may be a valuable support mechanism. You need to reach out for the support you need. Just as with treatment for mood disorders, family treatment for thyroid patients may be done in groups. Support group meetings offer opportunities for the family to share the difficulties of dealing with thyroid disease, which can include personality changes in the afflicted person. Because thyroid conditions such as Hashimoto's thyroiditis and Graves' disease can be considered genetic conditions, other family members (even children) may be afflicted in the future. It is extremely helpful for you and your family to feel that you are not the only ones dealing with the mental effects of a thyroid condition. In addition, meeting with other patients will give you an opportunity to learn about coping mechanisms that have worked successfully in other families.

Don't allow your doctor to dismiss your concerns or mislabel your condition. Throughout this book I have shown the similarities between symptoms of thyroid imbalance and symptoms of other conditions such as depression, anxiety disorders, hypoglycemia, chronic fatigue syndrome, and fibromyalgia. The similarities are so striking that you may receive the wrong diagnosis and the wrong treatment. Be persistent in having your doctor pursue an alternative diagnosis if your symptoms persist. If you educate yourself about your disease and common treatment options, you can become a more confident advocate for yourself.

Support public screenings and other efforts to make thyroid testing more commonplace. The public has been educated about cholesterol as a risk factor for coronary artery disease. People have learned that they should

try to keep their total cholesterol level lower than 200 and that they need to have a proper ratio of the “good” HDL cholesterol to the “bad” LDL. In the same way, the public should be made more aware of the importance of tests to assess thyroid function. The American Association of Clinical Endocrinologists took a good step in 1997 in this direction by promoting screening programs in several U.S. communities to detect unrecognized hypothyroidism. In Houston alone, these screenings enabled a significant number of individuals with previously undiagnosed thyroid conditions to get diagnosed and start treatment.¹

A 1996 study published in the *Journal of the American Medical Association* showed that TSH screening every five years in women age thirty-five and older is cost-effective because it allows the detection of unrecognized thyroid disease that may have significant health implications, including elevation of cholesterol and other problems.² This study, of course, did not take into account the toll that undiagnosed thyroid disease takes on personal relations and job performance. Given these additional costs, one realizes that more frequent TSH screening would undoubtedly prevent not only the negative effects on physical health but also a great deal of mental and emotional suffering.

Don't be shy about asking your primary care physician to refer you to an endocrinologist if necessary. A paradox in the current health care system that frustrates both endocrinologists and patients is that as research and knowledge have expanded, enabling specialists to provide the best care for thyroid patients, the responsibility for detecting and managing thyroid conditions still falls mainly on primary care physicians. Often, these doctors cannot provide optimal care for thyroid imbalances because they generally have neither the time, the expertise, nor the interest in the complex and intricate field of thyroidology. The American College of Physicians, the American Medical Association, and many other physician organizations recognize endocrinologists as physicians with expertise in hormonal and metabolic disorders. Thyroid specialists (traditionally endocrinologists) are trained in diagnosing and treating disorders of hormones, the body's chemical messengers. They are the most suitable physicians to care for patients with complex hormonal and metabolic conditions. The most common endocrine disorders are thyroid imbalances, diabetes mellitus, and metabolic bone disease, including osteoporosis.

The Endocrine Society's Clinical Endocrinology Initiatives Committee issued recommendations in 1995 relating to when primary care physicians should refer patients to endocrinologists.³ With respect to thyroid disorders, some recommendations stipulate that patients with hyperthyroidism should be assessed and treated by an endocrinologist until they are stabilized. Others

who should be referred include patients with unusually complicated hypothyroidism, those with difficult-to-interpret thyroid function tests, and patients with thyroid eye disease. Referrals should also be made for evaluation, biopsy, and management of thyroid nodules as well as for patients with unexplained abnormal thyroid exams or thyroid function tests. The recommendations also include patients with thyroid cancer as well as those with subacute thyroiditis or tender, painful thyroid glands.

Until primary care physicians become knowledgeable enough in the treatment of thyroid disease, insist on being referred to an endocrinologist with expertise in this field if you do not achieve the results you were expecting.

If you're enrolled in a managed care plan, be assertive about having your thyroid-related needs met. Managed care emphasizes the use of primary care physicians rather than endocrinologists to care for thyroid patients, which may eventually lead to dismissal of symptoms or less-than-optimal treatment. Because of cost constraints, primary care physicians in managed care settings may not retest as frequently as they should.

In the managed care system, many endocrinologists have even become concerned about the survival of endocrinology as a specialty. Several managed care plans discourage referrals to specialists. In fact, in many plans, when a patient is referred, reimbursement for primary care services is often reduced. Another problem is that managed care programs often dictate that when a referral is made, the patient must choose from a small pool of endocrinologists.

Shifting the care of thyroid patients from endocrinologists to primary care physicians and limiting referrals not only affect the quality of care but probably also increase overall costs. Selecting the wrong thyroid tests, misinterpreting the results, and monitoring test results either too often or not often enough may lead to even costlier health problems in the long run. According to an article on the potential inefficiencies of primary care in treating thyroid patients, marginal and subclinical diseases may be commonly dismissed in managed care environments.⁴

Agitate for improvements in physician training. Training program directors responsible for allocating teaching rotations need to implement a required systematic rotation in endocrinology. Family practitioners should have a thyroidologist teach them the art of examining a thyroid, emphasizing the importance of looking for thyroid problems and reiterating how to interpret thyroid function tests appropriately. They should also be given guidelines for referring patients to specialists, including doing so early if they are uncomfortable managing a patient.

Training and education in psychiatry for primary care physicians should be enhanced during residency. Psychiatrists also should receive adequate

instruction about detecting thyroid disease and be encouraged to refer patients to thyroid specialists.

These steps will help you and your family avoid unnecessary suffering. They will also help everyone become more aware of how important the thyroid gland is for health and happiness.

NOTES

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INDEX

A

- Acetylcholine, 311
- Achilles reflex time, 232
- Acupuncture, 180, 201
- Addison's disease, 174, 239, 241
- ADHD, 102-3, 115, 301
- Adrenal glands, 23, 173, 174, 179, 189
- Aggression, 61, 64, 163-64
- Aging, 17, 50, 208, 306-7
 - hyperthyroidism and, 74-76
 - hypothyroidism and, 50-52, 55
 - thyroid imbalance and brain damage, 306-7, 311
- Agoraphobia, 41, 66-67
- Agranulocytosis, 278-79
- Alcohol, 18, 40, 46, 94, 98, 102, 108, 115, 134, 196, 309, 376
 - thyroid imbalance and, 347
- Allergies, 354
- Aloe vera, 137
- Alopecia areata, 244
- Alpha-linolenic acid, 330
- Alprazolam, 200, 285, 326
- Alzheimer's disease, 51, 244, 307-8, 310, 330
- American Association of Clinical Endocrinologists, 5, 235, 251, 268, 387
- Amino acids, 18, 82, 135, 138, 328
- Amiodarone, 38, 233, 339, 345-46
- Amitriptyline, 179, 298, 301
- Amoxapine, 298
- Amygdala, 102
- Anafranil, 106
- Androgens, 140, 146, 195
- Anemia, 39, 170, 241
- Angeliq, 208
- Anger, 2, 66, 80, 157, 194, 200, 202, 221, 286
 - uncontrollable, 63-64, 158-60, 162-64, 166
- Animal thyroids, 100, 316
- Antacids, 273
- Antiandrogens, 140
- Antibodies, 16, 32, 96, 175, 274, 351
 - antithyroid, 27, 237, 238, 258
 - markers for autoimmune diseases, 16-17, 238-39
- Anticonvulsants, 110, 111-12, 114, 311
- Antidepressants, 25, 33, 88, 89, 112, 114, 115, 128, 179, 181, 200, 209, 226, 227, 255-56, 294, 297-303, 333
 - atypical, 297, 299, 301
 - combining, 303
 - commonly prescribed, 297-99
 - hyperthyroidism and, 25, 26
 - MAOIs, 297, 298, 302
 - overuse, 115
 - selecting, 297-303
 - sexual dysfunction and, 154
 - SNRIs, 108, 297, 298, 300, 301, 302, 303
 - SSRIs, 89, 104-5, 107, 112, 154, 297-302, 303

Antidepressants (*cont.*)

- T4/T3 therapy and, 325–26
- thyroid hormone as, 100–115
- tricyclic, 100, 106, 200, 297, 298, 301–2
- Antioxidants, 129, 130, 132, 135–36, 141, 177, 180, 181, 227, 262, 263, 280, 307, 308, 331–38, 362
- Antiseizure medications, 110–11, 179
- Antithyroid drugs, 33, 68, 278–80, 283–89, 292
- Anxiety, 6, 23, 31, 60, 77, 90–93, 95, 110, 119, 124, 148, 157, 182, 194, 200, 222, 276, 286
 - disorders, 10, 11, 28, 60, 65, 90–93, 171, 197, 233, 270
 - hyperthyroidism and, 60, 65–68, 76, 151
 - hypothyroidism and, 43–45, 48, 54, 90–91, 254, 256
 - infertility and, 213–16
 - persistent, 291–93, 295, 296, 297, 300, 302
 - thyroid dose and, 270–71
 - thyroid imbalance and, 8–11, 14, 90–93
 - work-related, 162–63
- Aplasia cutis, 289
- Appetite
 - changes in, 79, 80, 83, 84, 14, 194
 - eating behavior and metabolism, 121–29
 - regulation, 122, 126–27
 - suppressants, 121, 122, 130, 137–38, 140
 - thyroid hormone and, 123–29, 141
- Aripiprazole, 110, 111
- Armour thyroid. *See* Desiccated (Armour) thyroid
- Asher, R., 38
- Asthma, 345
- Atherosclerosis, 50, 308
- Ativan, 302
- Atomoxetine, 298, 301
- Attention, need for, 161
- Attention deficit hyperactivity disorder (ADHD), 102–3, 115, 301
- Atypical antipsychotics, 110, 111, 114
- Autoimmune disorders, 16–18, 28, 31–33, 174, 175, 177, 193, 223, 238–42, 244, 338

genetic predisposition to, 17, 239

Hashimoto's thyroiditis and, 258

Autonomic nervous system, 91, 145–47, 182, 311

B

- Bacteria, 18, 177, 332
- Barnes, Broda O., 275
- Barnes method, 275–76
- Basetsuper, 348
- Baumgartner, Andreas, 102
- Benzodiazepine, 302
- Beta blockers, 282, 285, 345
- Beta-carotene, 331, 332
- Beta-endorphin, 123
- Biest, 208
- Biofeedback, 180, 294, 295
- Biopsy, 284, 367–70, 371
- Biopsychiatry, 81–82, 93, 100
- Bipolar disorder, 61, 94–95, 96, 108–14, 139, 302, 346. *See also* Manic depression; Mood swing disorders
 - mood stabilizers for, 110–12
- Birth defects, 288, 289
- Black cohosh, 209
- Block-replace regimen, 286, 361
- Blood clotting, 59, 177
- Blood pressure, high, 8, 39, 47, 58, 120, 122, 308–9
- Blood sugar, 124, 131, 132, 182–83, 249
 - low, 124, 182–83, 189
- Body mass index (BMI), 137
- Bone, loss of, 59, 70, 112, 125, 202, 240, 316
- Botox, 359
- Brain, 6, 7, 77, 172, 330. *See also* Cognitive impairment
 - aging, 306–7, 311
 - chemistry, 81–82, 87–88, 93, 98, 102–6, 115, 121–25, 145, 147, 176, 188, 194–95, 197, 207, 291, 293, 314, 325, 332
 - eating behavior and metabolism, 121–24
 - fog, 44–46, 177
 - hyperthyroidism and, 56, 57, 63, 65
 - hypothyroidism and, 44, 51, 52, 53
 - prevention of cognitive impairment, 307–11

- response to stress, 21–22, 23, 30, 35
 - serotonin levels, 87–88, 93, 99, 104–5, 195, 207
 - sexual desire and, 145–47
 - thyroid function and, 7–8, 29–30, 77, 81–82, 87, 95, 98, 119, 146, 277, 293, 305–6, 317
 - thyroid imbalance and, 305–7
 - traumatic injury, 175
 - T3 and, 102–6
 - Brayshaw, Nora, 198
 - Breakfast, 134
 - Breast
 - cancer, 205–7, 209, 244, 274, 330, 379
 - enlargement, in men, 59
 - milky discharge, 39, 140
 - silicone implants, 18
 - tenderness, 195
 - Breast-feeding, 221, 224, 227, 289, 302, 379
 - Breathing problems, 39, 41, 91
 - Brown, David, 294
 - Bruising, 243
 - Bupropion, 154, 227, 298, 300–301, 303
 - Bush, Barbara, 5, 32, 68, 243, 354
 - Bush, George H. W., 5, 31–33, 68, 243
 - BuSpar, 302
 - Buspirone, 200
- C**
- Caffeine, 137, 180, 236
 - Calcium, 134–35, 201, 227, 273, 283, 341–42, 374
 - vitamin D and, 341–42
 - Campos-Barros, Angel, 109
 - Cancer, 38, 120, 139, 170, 205–7, 236, 242, 330, 335
 - breast, 205–7, 209, 244, 274, 330, 379
 - free radicals and, 331, 334
 - radioiodine treatment and, 281–82, 366, 370, 374, 375–80, 382
 - thyroid (*see* Thyroid cancer)
 - Carbamazepine, 104, 111
 - Carbohydrates, 83, 123, 133, 134, 182, 227
 - complex, 131, 133, 183, 328, 329
 - craving for, 123, 124
 - Cardiovascular disease, 39, 46, 91, 92, 120, 122, 125, 139, 174, 176, 202, 327–28, 330, 334
 - estrogen therapy and, 205–6
 - hyperthyroidism and, 58, 59, 70, 74, 75
 - hypothyroidism and, 46–47, 254–55, 309
 - risk factors, 309–10
 - thyroid hormone dose and, 269–70, 271
 - Carpal tunnel syndrome, 40
 - CB1 endocannabinoid system, 122
 - CCK-4, 82
 - Celiac disease, 172, 240–41, 245
 - Central nervous system, 181
 - CFS. *See* Chronic fatigue syndrome
 - Chest pain, 59, 91
 - Children, 27, 175
 - hypothyroidism in, 38, 52–54
 - postpartum depression and, 220–28
 - radioiodine and, 282
 - thyroid cancer in, 366
 - thyroidectomy in, 282
 - Chills, 91, 180
 - Chiropractic, 201
 - Cholecystokinin tetrapeptide (CCK-4), 82
 - Cholesterol, 50, 134, 137, 231, 273, 387
 - high, 122, 206, 249, 309
 - hypothyroidism and, 39, 47, 254
 - lowering, 309
 - Chopra, Deepak, 22
 - Chromium, 136, 140, 201
 - Chronic fatigue syndrome (CFS), 172–73, 174, 180–82, 189
 - causes, 181
 - diagnosis, 184–87
 - symptoms, 180–81, 184
 - treatment, 181–82
 - “Circle of wellness,” 311–13
 - Cirrhosis, 242
 - Citalopram, 107, 200, 297
 - Clomiphene, 140
 - Clomipramine, 298
 - Coenzyme Q10, 336
 - Cognitive behavioral therapy, 135, 180, 201, 227, 296
 - Cognitive impairment, 41–46, 48, 51–54, 61, 101, 256–57, 291, 305–11
 - aging and, 306–7
 - preventing and curing residual, 307–10

Cold intolerance, 39, 48, 276
 Cold remedies, 345
 Commitment, lack of, 161–62
 Computerized tomography (CT) scan, 367
 Concentration, impairment of, 15, 41, 44–46, 51, 65, 79, 80, 84, 90, 182, 194, 276, 305
 Constipation, 12, 37, 39, 40, 50, 74
 Corticosteroids, 359, 360, 362
 Corticotropin-releasing factor (CRF), 22–23
 Cortisol, 30–31, 173–75, 179, 181, 195, 311
 Cortisone, 73, 74, 233
 Counseling, 180, 296–97
 Cousins, Norman, 22
 Covert hypothyroidism. *See* Hypothyroidism, covert
 Coxsackie B virus, 17–18
 CRF, 22–23
 Crohn's disease, 241
 CT scan, 367
 Cyclothymia, 97–98
 Cymbalta, 298
 Cystitis, 176
 Cytokines, 172
 Cytomel, 101, 107, 108, 114, 277, 320, 376

D

Deafness, 53
 DeBaey, Michael, 46
 Dementia, 42, 51, 75, 306–11, 313, 330
 Depression, 3, 6, 7, 8–11, 22, 23, 26, 50, 51, 77–89, 94, 99, 101, 103–6, 119, 121, 124, 139, 172–73, 178, 182, 194, 233, 245, 272, 276, 317, 322
 atypical, 83–84, 89
 chronic, 83–84
 dysthymic, 84–85, 89
 fatigue and, 171, 173, 180–81
 Hashimoto's thyroiditis and, 27–28, 86, 255
 hyperthyroidism and, 60–62, 67–69, 70, 75
 hypothyroidism and, 27–28, 41–46, 48, 79–81, 83–89, 91, 95, 96, 125, 254, 255–56, 292
 infertility and, 215, 218, 219

 low-grade, 77, 78–81, 86–87, 89
 major, 85–89
 manic, 94–95, 96, 97, 98, 108–14
 menopausal, 197, 202, 204, 207
 persistent, 292–303
 PMS and, 197
 postpartum, 27, 220–28
 postwar syndrome, 30
 severe, 96, 101, 107
 sex drive and, 146, 149–50, 153–55
 symptoms and, 10, 78–81
 thyroid imbalance and, 8–11, 77–89, 102–6, 109, 112
 treatment, 88–89, 101, 104, 106–15, 297–303, 311, 325–26
 Dermatitis herpetiformis, 243, 244
 Desiccated (Armour) thyroid, 100–101, 263, 316, 320, 322–23, 348
 Desipramine, 104, 298
 DHA, 330
 DHEA, 155, 181, 193, 208
 Diabetes, 108, 120, 122, 139, 140, 239, 241, 249, 309, 310
 Diagnosis, 231–46, 247, 249. *See also* Tests
 Diarrhea, 56
 Diet, 17, 18, 121, 125, 128, 307, 310, 327, 328–43
 antioxidants and, 331–38
 balanced-deficit, 130
 gluten-free, 241
 healthy, 328–43
 low-calorie, 130
 low-glycemic-load, 131–34, 140, 328
 PMS and, 201
 thyroid eating plan, 131–34, 140
 Digitalis, 345
 Dilantin, 273
 Disconnection, feelings of, 78–80, 86–87, 91
 Distractibility, 103
 Divalproex, 110, 111
 Dizziness, 91, 92, 175, 310
 Docosahexaenoic acid (DHA), 330
 Dong quai, 209
 Dopamine, 82, 110, 154, 233
 Dosage, 266
 antithyroid drugs, 278–80
 T4, 268–72
 thyroid hormone, 268–77, 279–80, 287
 T3, 276–77
 Down syndrome, 53, 240, 244, 331

Doxepin, 298, 301
 Drugs, 345–47. *See also* Dosage; *specific drugs*
 antithyroid, 33, 68, 278–81, 283–89, 292
 fertility, 216, 217
 generic, 268–69
 interactions, 38, 233, 273–74, 303, 311, 345–47
 mood stabilizers for bipolar disorders, 110–12
 over-the-counter, 345
 weight-control, 121, 122, 128, 137–38
 Duloxetine, 179, 298, 300
 Dying, fear of, 91
 Dyslexia, 243, 244
 Dysthymia, 84–85, 89

E

Eating behavior and metabolism, 121–29
 Eating disorders, 29, 108, 276
 Edronax, 298
 Education, patient, 385–86
 Effexor, 298, 300
 Eicosapentaenoic acid (EPA), 330
 Elation, 61–63
 Elavil, 298
 Electroshock, 101
 Emotions, 7, 102, 193
 exaggerated responses, 61–64
 PMS and, 194–201
 relationship problems, 157–69
 thyroid imbalance and, 8–11, 18, 22
 Empty sella, 175
 Endocrine system, 101, 172, 173–76, 195
 disorders, 188
 fatigue, 173–76
 stress and, 23, 30, 173
 Endocrinology, 6, 98, 115, 195, 284, 373, 387–88
 Endometriosis, 212
 Energy, 3, 56
 excess, 56–57
 lack of, 79–80
 Environment, 17, 18, 19, 32, 347
 Enzo-Caps, 348
 Enzymes, 38, 109, 138, 237, 276
 EPA, 330
 Escalation cycle, 24–28, 33, 36

Escherichia coli, 18
 Escitalopram, 297, 299–300
 Esquirol, Jean-Etienne-Dominique, 220
 Estradiol, 207, 208, 209
 Estratest, 155
 Estrogen, 17, 59, 70, 146, 193, 194–95, 201, 211, 221, 234, 274
 menopause and, 154, 201–9, 310–11
 mental benefits, 310–11
 treatment, 14, 154–55, 176, 200, 205–9, 274, 310–11
 Exercise, 119, 128, 129, 130, 327, 343–45
 aerobic, 180, 201, 344–45
 benefits, 343–45
 lack of, 18, 119, 124, 310
 mindful, 294–95
 Eye disease, 350–63
 autoimmune, 351–55
 diverse effects, 356–57
 misdiagnosis, 353–55
 radioiodine treatment and, 281–83, 353, 361–62
 symptoms, 351, 352–53, 356, 357, 358
 treatment, 356, 358–62
 Eyes
 bulgy, 7, 350–60
 problems with, 25, 56, 58, 350–56
 surgery, 360–61

F

Fat, body, 121, 126, 127, 129, 133, 208
 Fatigue, 11, 20, 38, 40, 58, 77, 80, 81, 83–86, 90, 101, 170–73, 176, 202, 275. *See also* Chronic fatigue syndrome (CFS)
 causes, 170–83, 188–89
 endocrine, 173–76
 hyperthyroidism and, 69–70
 hypoglycemia and, 182–83
 hypothyroidism and, 42–43, 54, 147–48, 248, 252–53, 257, 258
 thyroid imbalance and, 8–11, 170–89
 Fat metabolism, 121–22
 Fats, dietary, 131, 132–33, 310, 328
 craving for, 123, 128
 essential, 329–30
 types, 132–33
 FDA, 268–69

Feet, numbness in, 40, 91, 92
 Fiber, 130, 131, 132, 273
 Fibromyalgia, 172–73, 176–80, 189, 262, 287, 295
 causes, 177–79
 diagnosis, 184–87
 euthyroid, 178, 323
 hypothyroid, 177–78, 323, 324
 symptoms, 176–77, 179, 184
 T4/T3 therapy for, 323–24
 treatment, 177, 179–80, 262
 Fish and seafood, 134, 330, 340
 5-hydroxytryptophan (5-HTP), 138, 181
 Fluoxetine, 107, 200, 297, 299
 Folic acid, 18, 39, 227, 307–8, 332, 335–36
 Food and Drug Administration (FDA), 268–69
 Free radicals, 129, 136, 177, 307, 331–32, 336
 Free thyroxine index (FTI), 234
 Fruits, 132, 310, 331
 FTI, 234
 Fungal infections, 39

G

GABA. *See* Gamma-aminobutyric acid
 Gabapentin, 112
 Gambooge, 136
 Gamma-aminobutyric acid (GABA), 82, 91, 123, 195, 302, 304
 Gastrointestinal system, 122, 123, 138
 problems, 8, 40–41, 58, 195, 240–41
 Genetics, 17, 18, 32, 34, 38, 52, 53, 103, 121, 139, 218, 236, 239, 243, 288, 340, 364, 369, 386
 Ghrelin, 122, 123
 Gingko, 137
 Ginseng, 136, 137, 209
 Globulin, 318
 Glucomannan, 137
 Glutamic acid, 304, 308
 Glycemic index, 131–32, 183
 Goiter, 7, 27, 38, 52, 83, 85, 142, 199, 218, 236–37, 246, 250, 258, 284, 285, 288, 318
 multinodular nontoxic, 236–37
 multinodular toxic, 72–73, 280, 347
 neck check for, 235–36

 nontoxic, 236–37
 toxic, 72–73, 236, 237
 Goitrogens, 261, 329
 Grains, 131, 310
 Graves, Robert, 7
 Graves' disease, 7–8, 12, 14–18, 38, 59, 60, 61, 63, 64, 68, 70, 72, 73, 76, 142, 153, 159, 168, 174, 175, 193, 194, 223, 225, 236–40, 267, 274, 289, 292–93, 314, 317, 327, 339, 347
 associated conditions, 239–44
 conjugal, 32
 covert hypothyroidism and, 260
 eye disease, 350–63
 stress and, 24–28, 31–33, 34
 treatment, 277–87
 weight gain and, 128
 Green tea, 137
 Growth hormone, 129, 140, 174–76, 179, 201
 treatment, 176, 180
 Guilt, 60, 79, 167, 168, 226
 Gull, William, 7

H

Hair

 brittle, 39
 loss, 15, 39, 43, 48, 56, 58, 139, 216, 243–44, 276
 premature graying, 243, 244

Hallucinations, 41, 61, 86, 95, 225, 270

Hands

 numbness in, 40, 91, 92
 shaking, 56, 57

Hashimoto's encephalopathy, 172

Hashimoto's thyroiditis, 16–18, 38, 51, 52, 96, 138, 174, 175, 193, 218, 223–25, 236–40, 250, 257, 274, 288, 309, 317, 328, 338, 346, 350

 Alzheimer's disease and, 51
 antibody-based tests for, 238
 associated conditions, 239–43
 depression and, 27–28, 86, 255
 diagnosing, 258
 dismissal of symptoms of, 259
 prevalence, 258
 stress and, 27–28
 symptoms, 258

Hatred, unexplained, 162

- Headaches, 12–13, 43, 68, 176, 180, 182, 195, 200, 275, 310
- Heartbeat, rapid, 7, 8, 12, 20, 25, 26, 58, 59, 64, 70, 91, 92, 182, 236, 271
- Heart problems. *See* Cardiovascular disease
- Heat intolerance, 54, 58, 64, 70, 74, 276
- Helicobacter pylori*, 18, 332
- Hepatitis, 170
- Herbs, 136–37, 209
for lingering symptoms, 303–5
- Hives, 243
- Homocysteine, high, 39, 47, 307, 309, 334, 336
- Hormone replacement therapy (HRT), 205–9, 310–11
- Hormones, 6, 27, 121. *See also specific hormones*
bioidentical, 208
endocrine fatigue, 173–76
menopause and, 154–55, 201–9
menstrual problems, 13–14, 139
PMS and, 194–96
sex, 17, 146–47, 154–55, 193–94, 211
thyroid imbalance masked as problems with, 13–14
treatment, 154–55, 202, 205–9, 274, 310–11
- Hot flashes, 91, 197, 202, 203, 207–9
- HRT, 205–9, 310–11
- Hyperactivity, 60, 102–3, 224
- Hyperthyroidism, 3, 5, 16–17, 56–76, 95, 114, 158, 178–79, 193, 211, 291, 293, 314, 338
aging and, 74–75, 76
antidepressants and, 25, 26
anxiety and, 60, 65–68, 76, 151
apathetic, 75
cardiovascular effects, 58, 59, 70, 74, 75
causes, 74
cognitive impairment in, 306
depression and, 60–62, 67, 68–69, 70, 75
drug interactions and, 346
eye disease and, 350–63
job performance and, 70–71
long-term effects, 245
low-grade, 70
menstrual problems and, 56, 59, 64
mental effects, 60–70
mood swings and, 95
postpartum, 223, 224–25, 228
questionnaire on symptoms of, 71–72
relationship problems and, 158–67
sex drive and, 142, 143–44, 150–53, 156
symptoms, 10, 12–13, 31–32, 58–72
treatment, 277–87, 289
TSH levels in, 232, 233, 235, 317
weight gain and, 123, 126, 127, 128–29
weight loss and, 56, 57, 58, 68, 70, 74, 125–27
- Hypnotherapy, 180
- Hypoglycemia, 41, 124, 175, 182–83, 189, 328–29
- Hypomania, 56–58, 61–63, 93–95, 151, 152, 224, 271
- Hypopituitarism, 174–75
- Hypothalamus, 22, 29, 30, 38, 87, 105, 121, 122, 135, 139, 193, 245
- Hypothyroidism, 3, 5, 7, 9, 10, 16, 27–28, 37–55, 73, 74, 82, 85, 88, 99, 100, 158, 177–78, 181, 193, 291, 314, 338
acute, 375–77
aging and, 50–52, 55
anxiety and, 43–44, 45, 48, 54, 90–91, 256
Barnes and Wilson treatment methods, 275–77
causes, 38, 244–45, 258
childhood, 38, 52–54
cognitive impairment in, 256–57, 305–6, 307
congenital, 52–54, 288, 307
covert, 247–48, 252–53
causes, 258–61
defined, 247–48
diagnosing, 252, 253
from inefficiency of thyroid hormone, 261–63
prevalence, 258
symptoms, 253–58
treatment, 263
depression and, 27–28, 41–48, 79–81, 83–89, 91, 95, 96, 125, 254, 255–56, 292
diagnosis, 184, 187, 247, 249
drug interactions and, 345–46

Hypothyroidism (cont.)

- effects, 38–44
- fatigue and, 42–43, 54, 147–48, 248, 252–53, 257, 258
- hypoglycemia and, 182–83
- long-term effects, 245, 309
- low-grade, 42, 47–48, 55, 77, 79–81, 235, 258, 309
- menopause and, 201–2, 207
- mental effects, 41–46, 48, 54
- misdiagnosis, 13–14, 37–38
- mood-swing disorders and, 94–98
- PCOS and, 138–40
- PMS and, 197–98, 199, 200
- postpartum, 161, 162, 223, 224–25, 228, 260
- pregnancy and, 288–89
- progression, 42
- questionnaire on symptoms of, 49–50
- relationship problems and, 158–67
- reproduction and, 211–19
- severe, 38, 40, 41, 42, 55, 77, 95, 258, 269
- sex drive and, 142, 146–49, 152, 154, 156
- stress and, 27–28, 88, 276
- symptoms, 10, 12, 13, 15, 37–50, 184, 198, 248
- in teenagers, 96–97
- T4/T3 therapy for, 314–26
- transient, 38
- treatment, 267–77, 288–89
- TSH levels in, 232–35, 246, 247, 249–50, 267–74, 315–17
 - redefining normal range, 249–51
- weight gain and, 37, 38, 40, 46, 119, 120, 124–25, 127, 130, 141, 148, 248, 257

Hysterectomy, 207, 321

I

- Imipramine, 100, 298
- Immune system disorders, 38, 161–68, 172–73, 175, 181, 188, 333, 351
 - stress and, 17–19, 27, 28, 31, 173
 - thyroid connection, 16–18, 19
- Impatience, 158–60
- Inderal, 285
- Infants, hypothyroidism in, 52–54

- Infections, 17–19, 23, 32, 39, 151, 170, 188
- Infertility, 47, 59, 139, 140, 211–19, 379
 - depression and, 215, 218, 219
 - hypothyroidism and, 211–17
 - stress and, 213–16, 219
- Insulin, 108, 121–22, 129, 131, 134, 136, 176, 183, 227
 - resistance, 111, 122, 129, 139, 140, 310
- Intercourse, pain during, 148, 149, 151, 155
- Interferon, 38, 346
- Interleukin-2, 38
- Iodine, 18, 102, 232, 282, 338–40
 - deficiency, 38, 48, 52, 237, 261, 340
 - dietary, 338–40, 376
 - excess, 338–40, 376
 - radioactive (*see* Radioiodine)
- Iron, 39, 273
- Irrational behavior, 164–65
- Irritability, 41, 61, 66, 71, 90, 157–66, 176, 182, 194, 200, 202, 204, 275, 276
- Irritable bowel syndrome, 57, 176, 201, 276
- Isocarboxazid, 298
- Isoflavones, 201, 209
- Isolation, desire for, 160–61

J

- Job performance, 70–71, 162–63
- Joint pain, 13, 39, 41, 175, 180, 324

K

- Kabat-Zinn, Jon, 294
- Kennedy, John F., 239
- Kennedy, John F., Jr., 239

L

- Lamotrigine, 110, 111
- Lemon balm, 305
- Leptin, 121–23, 127–31, 135, 136, 140, 195–96
- Levo-T, 268

Levothyroxine, 112, 113, 267–69, 314–16,
322–23, 361
dosage, 269–71, 272
generic, 268–69
Levoxyl, 268
Lexapro, 297, 299
Librium, 302
Lichen sclerosus, 149
Lifestyle, healthy, 327–49
Limbic system, 21–22, 82, 96
Linoleic acid, 133, 330
Lithium, 38, 95, 96, 97, 100, 104, 105, 107,
108, 110, 112, 114, 233, 302,
346–47
Liver, 234, 279
Low-glycemic-load diet, 131–34, 140,
328
L-thyroxine, 130, 217, 263, 297
L-tryptophan, 303–4
Lumps, 70, 72, 236–37. *See also* Goiter;
Nodules
biopsy, 284, 367–70, 371
neck check for, 235–36
thyroid cancer, 366–71
Lupus, 32, 179, 239, 241, 279
Lymph nodes, 369, 370, 374, 382

M

Magnesium, 181, 201, 336–37
Magnetic resonance imaging (MRI), 350,
367
Mammogram, 207
Managed care system, 388
Mania, 42, 56, 57, 61, 62, 93–95, 110,
270
Manic depression, 94–95, 96, 97, 98,
108–14
MAOIs, 297, 298, 302
Maprotiline, 299
Meat, 133, 134
Meditation, 22, 35, 180, 294, 295
Melatonin, 179
Memory, impairment of, 41, 44–46, 48,
79, 256–57, 276, 292, 305, 306,
311
Men, sexual problems in, 152–53
Menopause, 3, 14, 15, 27, 35, 40, 51–52,
64, 139, 154, 179, 197, 202–10,
310

hormone therapy for, 205–9, 310–11
hypothyroidism and, 201–2, 207
natural therapy for, 208–9
sexual desire and, 154–55, 208
symptoms, 197, 202–3, 204
thyroid's effects on, 202–3
transition, 202, 203–9
Menstrual cycle, 194–97, 310
problems, 13–14, 39, 48, 56, 59, 64, 111,
139, 140, 193, 275, 310, 379
Mental health problems, 8–11
Metabolic rate, 50, 121–25, 133
basal, 50
eating behavior and, 121–25
regulation, 7, 29–30
slow, 119, 120, 128–29, 137, 202, 269,
276, 317
thyroid hormones and, 8, 29–30,
121–25
Metabolic syndrome, 122
Metformin, 137, 140
Methimazole, 278, 279, 284, 286, 289, 362
Milk, 134
Mind-body techniques, 294–95, 296
Mirtazapine, 299, 301
Miscarriage, 47, 218–19, 288, 379
Modafinil, 303
Monoamine oxidase inhibitors (MAOIs),
297, 298, 302
Monosodium glutamate, 135
Mood stabilizers, for bipolar disorders,
110–12
Mood swing disorders, 9–10, 26, 28, 61, 77,
81, 93–98, 99, 106, 108, 109, 124,
194, 197, 270. *See also* Manic
depression
thyroid dose and, 270–71
thyroid imbalance and, 81, 93–98, 99,
112–13, 254
MRI, 350, 367
Multiple sclerosis, 240
Murray, George, 100
Muscles, 8, 343
coordination problems, 40
fibromyalgia and, 176–80
loss of mass, 129, 176
pain, 13, 39, 41, 43, 51, 175, 176, 177,
180, 275
weakness, 40, 58, 67, 74, 124, 172, 174,
175, 180, 244
Myasthenia gravis, 241

Myelin, 307
 Myopathy, 40
 Myxedema coma, 41

N

Napoleon, 37
 Naturopathic doctors, 263
 Nausea, 91, 92, 299, 310
 Neck, 72
 pain, 73
 self-examination, 235–36
 surgery, 38
 Nefazodone, 154, 299, 301
 Nervousness, 60, 75
 Neuropathy, 40
 Neurotransmitters, 196, 202, 311, 332
 Nightmares, 225
 Nodules, 38, 72, 236–37, 242, 284. *See also*
 Goiter; Lumps
 nontoxic, 236–37
 removal of thyroid lobe for, 260
 thyroid cancer, 366–71
 toxic, 72–73, 236, 280
 Noon, George, 46
 Noradrenaline, 82, 91, 93, 101, 103–4, 105,
 108, 123, 300
 Norepinephrine-dopamine reuptake
 inhibitor, 298, 301
 Northrup, Christiane, 204
 Nortriptyline, 298, 301
 Novothyrox, 268
 NSAIDs, 243, 378
 Nuts, 131, 132, 134

O

Obesity, 119–20, 121, 132–33, 136, 137,
 196
 Obsessive-compulsive behavior, 81, 90, 271,
 299
 Olanzapine, 110, 111
 Olive oil, 133, 134, 330
 Omega-3 fatty acids, 18, 135, 177, 181, 209,
 263, 308, 330
 Oophoritis, 242
 Optic nerve, 352, 360
 Oral contraceptives, 140, 200, 274
 Orgasm, 145, 146, 148, 151, 153

Orlistat, 137, 138, 140
 Osteoarthritis, 120, 179
 Osteoporosis, 59, 125, 240, 316, 341
 Overactive thyroid. *See* Hyperthyroidism
 Ovulation, 139, 140, 194, 197, 211, 216
 Oxytocin, 145

P

Pain
 fibromyalgia, 176–80
 during intercourse, 148, 149, 151,
 155
 joint, 13, 39, 41, 175, 180, 324
 muscle, 13, 39, 41, 43, 51, 175, 176, 177,
 180, 275
 neck, 73
 Palpitations. *See* Heartbeat, rapid
 Panic attacks, 20, 23, 43, 48, 60, 65–67, 76,
 90–93, 200, 256, 276
 symptoms, 91
 thyroid hormone dose, 270
 thyroid imbalance and, 91–93
 Paranoia, 33, 41, 61
 Parathyroid glands, 282, 283
 Paroxetine, 107, 200, 297, 299, 300
 Parry, Caleb, 7, 26
 Paxil, 297, 299
 PCOS, 138–41
 Pendred syndrome, 53
 Perimenopause, 3, 15, 201–2, 311
 Perrild, Hans, 306
 Personality, changes in, 143–44, 158–67
 PET, 112
 Phenelzine, 298
 Phenobarbital, 273
 Phobias, 90
 Phosphatidylserine, 308
 Physicians, 5, 6, 20, 34, 195, 231,
 385–89
 choosing, 266–67, 289, 372–74,
 387–88
 competency, 370–74, 388–89
 dismissal of symptoms, 8–9, 11–16, 18,
 250, 252, 253, 386
 misdiagnosis of thyroid imbalance,
 8–16, 18, 24, 26, 37–38, 371–72,
 386
 naturopathic, 263
 training, 5–6, 8–10, 18

- Phytoestrogens, 209
- Pins-and-needles sensation, 40
- Pituitary gland, 15, 23, 29, 30, 38, 87, 103, 105, 173, 174, 179, 189, 193, 232, 245–46, 247, 250, 261, 316
 covert hypothyroidism and, 252
 deficiency, 245–46
 fatigue, 174–75
 hormone deficiencies, 175–76
- Pituitary-thyroid challenge testing, 250, 253, 257
- Placebo effect, 262
- Pleural effusion, 41
- PMS. *See* Premenstrual syndrome
- Pollution, 18
- Polycystic ovary syndrome (PCOS), 138–41
- Polyglandular failure syndrome, 239
- Polymyalgia rheumatica, 179
- Polymyositis, 179
- Positron emission tomography (PET), 112
- Postpartum period, 27, 35, 161, 162, 194, 220–28, 260
 depression, 27, 220–28
 hidden suffering of, 220–22
 patterns and effects of thyroid imbalance, 223–27
 treatment, 227–28
- Post-traumatic stress syndrome, 23, 30–33, 34, 90, 153, 276, 292, 293, 301
- Postwar syndromes, and thyroid, 30–34
- Prednisone, 281
- Pregabalin, 179
- Pregnancy, 17, 193, 194, 211, 220, 281, 302, 340
 radioiodine and, 281–82
 T4/T3 levels in, 234
 thyroid cancer and, 370
 thyroidectomy during, 282, 283
 thyroid imbalance and, 211–19, 288–89
- Premenstrual syndrome (PMS), 149, 194–201, 209–10, 214, 222, 276
 symptoms, 194, 195, 198, 199, 200
 thyroid hormone imbalance and, 197–200
 treatment, 200–201
- Progesterone, 193, 194, 195, 211, 221
 treatments, 14, 205–8, 310
- Prolactin, 140–41, 146, 175
- Propranolol, 285
- Propylthiouracil (PTU), 278, 281, 285, 289
- Protein, 131, 132, 133, 134, 196, 328
- Protriptyline, 298
- Prozac, 3, 101, 106, 199, 297, 299, 325, 326
- Pseudoephedrine, 345
- Psychopharmacology, 98
- Psychosis, 86
 in hyperthyroidism, 61–62, 63
 in hypothyroidism, 38
 postpartum, 225–26
- Psychotherapy, 108, 144, 155, 227, 296–97
- PTU. *See* Propylthiouracil
- Puberty, 17, 193
- Pulse, 236
- Pyruvate, 137
- ## Q
- Quercetin, 179, 304
- Quetiapine, 110, 111
- ## R
- Radiation, 18, 38, 242
 external, 242, 360, 364, 368, 369, 380, 382
 nuclear fallout, 242, 364, 369
 treatment (*see* Radioiodine)
- Radioiodine, 38, 72, 73, 237, 280–82, 284–87, 305
 aftermath, 378–79
 for cancer, 281–82, 366, 370, 374–80, 382
 cancer risk, 379
 eye disease and, 281, 282, 283, 353, 361–62
 scan, 375–79, 381
 thyroid hormones and, 286–87
 wild fluctuations and, 286–87
- Raloxifene, 209
- Rapid-cycling, 96, 114
- Reality, lack of, 160
- Reboxetine, 298, 301

Relationships, 144, 157–69
 effects of thyroid imbalance on, 157–69
 following diagnosis, 157–58, 167–68
 infertility and, 213–14, 217
 partner's most common reactions, 165–67
 prior to diagnosis, 157, 158–65
 sexual dysfunction in, 143–56
 therapy, 296
 what partners need to know, 168–69

Relaxation techniques, 22, 33, 34, 35, 180, 201, 209, 286, 294–95, 324

Remission, 278, 279–80, 285, 286

Retroviruses, 32

Rheumatoid arthritis, 179, 239, 241, 330

Rhodiola rosea, 304

Rimonabant, 122

Risperidone, 110, 111

S

SAD, 109–10

Salivary gland damage, 379

Salt
 iodized, 340, 376
 retention, 310

Saturated fats, 132, 133

Schmidt, Peter, 197

Scleroderma, 242

Seasonal affective disorder (SAD), 109–10

Sedatives, 345, 376

Seizures, 40, 301

Selective estrogen receptor modulators (SERMs), 209

Selective serotonin reuptake inhibitors (SSRIs), 89, 104–5, 107, 112, 154, 200, 209, 294, 297–303
 T4/T3 therapy and, 325–26
 T3 and, 107

Selegine, 298

Selenium, 18, 227, 261, 262, 331, 332–33

Self-esteem, 63, 119–20, 148, 162, 165, 244, 294, 354

SERMs, 209

Serotonin, 81, 82, 87, 93, 98, 101, 154, 181, 201, 303, 304, 310, 329
 brain levels, 87–88, 93, 99, 104–5, 195, 207
 eating behavior and, 123–24

Serotonin-norepinephrine reuptake inhibitors (SNRIs), 108, 209, 297, 298, 300, 301, 302, 303

Serotonin syndrome, 302

Sertraline, 107, 200, 227, 297, 299

Sex drive, 142–56, 193
 decreased, 15, 146, 147–51, 153, 154
 depression and, 146, 149–50, 153, 154, 155
 effects of thyroid hormone on, 145–47
 hyperthyroidism and, 142, 143–44, 150–53, 156
 hypothyroidism and, 142, 146, 147–49, 152, 154, 156
 improving sexual relationships, 153–55
 increased, 143–44, 145, 151–52
 infertility and, 214–15, 219
 in women, 145–46

SFM, 177

Shakiness and tremors, 56, 57, 58, 91

Sibutramine, 121, 137–38, 140

Side effects
 antidepressants, 297–99
 antithyroid drugs, 278–79

Siegel, Bernie, 22

Sildenafil, 155

Sjögren's syndrome, 149, 179, 239, 240, 242

Skin
 aging, 208
 disorders, 58, 240, 243
 dry, 8, 12, 15, 37, 48, 50, 216
 loss of pigment, 240
 thickened, 39
 yellowish, 39

Skinner, Gordon R. B., 262

Sleep apnea, 40, 120

Sleep problems, 40, 41, 68, 79, 83, 84, 86, 90, 171, 177, 179, 180, 194, 200, 202, 204, 208, 301

Smoking, 18, 19, 27, 40, 196, 300, 309, 360, 362
 thyroid imbalance and, 347

SNRIs. *See* Serotonin-norepinephrine reuptake inhibitors

Soluble fibrin monomer (SFM), 177

Sore throat, 369, 378

Soy, 53, 209, 308, 329

Spironolactone, 201

Spirulina, 304

Spouse. *See* Relationships

SSRIs. *See* Selective serotonin reuptake inhibitors

St. John's wort, 136, 304

Strattera, 298, 301

Stress, 20–36, 66, 68, 87, 88, 94, 172–73, 179, 223, 270, 276, 362

- brain response to, 21–22, 23, 30, 35
- endocrine system and, 23, 30
- escalation cycle, 24–28, 33, 36
- Graves' disease and, 24–28, 31–33, 34
- Hashimoto's thyroiditis and, 27–28
- Immune system and, 17–19, 27, 28, 31, 173
- infertility and, 213–16, 219
- lingering, 297
- management, 33–35, 36, 135, 285–86
- menopause and, 204
- post-traumatic stress syndrome, 30–33
- response to, 21–23
- thyroid imbalance and, 8, 9, 17, 20–36

Strokes, 308

Sugars, 131, 182

- refined, 131, 310
- simple, 131, 140, 183, 196

Suicidal thoughts, 84, 86, 221

Supplements

- for covert hypothyroidism, 263
- dietary, 331–43
- for lingering symptoms, 303–5
- menopause, 209
- weight control, 136–37

Support, 181, 386

- cancer, 382–83
- groups, 295, 357, 383, 386
- postpartum, 222, 227
- of spouse, 165–69

Sweating, 58, 65, 74, 91, 181, 182, 202, 216

Symptoms, 3

- anxiety disorders, 10, 256
- chronic fatigue syndrome, 180–81, 184
- covert hypothyroidism, 253–58
- denial of, 11–12
- depression, 10, 78–81, 254, 255–56
- dismissal of, 8–9, 11–16, 18, 386
- fibromyalgia, 176–77, 179, 184
- gynecological, 13–14
- hyperthyroidism, 10, 12–13, 31–32, 58–72
- hypothyroidism, 10, 12–13, 15, 37–50, 184, 198
- menopausal, 197, 202–3
- misdiagnosis, 8–16, 18, 24, 26, 37–38, 386
- panic attacks, 91, 256
- persistent, 291–313
- postwar syndrome, 30–33
- thyroid imbalance, 3–4, 7, 8, 15, 20

Syndrome of thyroid hormone resistance, 103

Synthroid, 268

T

Tai chi, 35, 180, 293, 294

Tamoxifen, 274

TBG, 234

Tear duct obstruction, 379

Teenagers, hypothyroidism in, 96–97

Tegretol, 273

Temperature, basal, 231, 276, 277

Tenderness, thyroid, 237

Testosterone, 17, 139, 140, 146, 193, 311

- treatment, 154–55, 208

Tests, 5, 9, 15–16, 231–46, 247, 251–52. *See also specific tests*

T4. *See* Thyroxine

T4/T3 therapy, 89, 154, 200, 227, 273, 294, 297, 314–26

- antidepressants and, 325–26
- for fibromyalgia, 323–24
- right combination of, 319–21
- switching from natural hormone to, 322–23

Theophylline, 345

Thirst, increased, 58

- Thyme oil, 304–5
- Thyrogen, 381–82
- Thyroglobulin, 370, 380, 381
- Thyroid arterial embolization, 283
- Thyroid-binding globulin (TBG), 234
- Thyroid cancer, 236, 242, 281, 283, 284, 333, 336, 364–84
 - choice of physician, 372–74
 - continued monitoring of, 380–82
 - detection, 284, 366–74
 - lumps, 366–71
 - radioiodine for, 375–80, 382
 - treatment, 365–82
 - types, 365–66
- Thyroidectomy, 282–83, 318, 369, 374, 375
- Thyroid gland
 - aging and, 50–52
 - brain and, 7–8, 29–30, 77, 81–82, 87, 95, 98, 119, 146, 276, 293, 305–6, 317
 - changing views of, 7–8
 - destruction of, 280–82, 286–87, 361–62
 - ectopic, 52
 - examination, 6
 - function, 7–8
 - lumps in, 236–37, 366–71
 - mind and, 4–6, 8, 22
 - prolonged stimulation of, 30–32, 34
 - removal, 282–83, 318, 369, 374, 375
 - sexuality and, 145–47
 - ultrasound, 237, 238
- Thyroid hormones, 5, 6, 7, 9, 22, 30–31, 50, 52, 70, 81–82, 87, 97, 101, 102, 105, 141, 181, 193, 195, 206, 211, 232, 236, 243, 260, 292, 308.
 - See also* Thyroxine (T₄); Triiodothyronine (T₃)
- as antidepressants, 100–115
- Barnes and Wilson treatment methods, 275–77
- for covert hypothyroidism, 263
- dose, 268–77, 279–80, 287
- drug interactions, 273–74
- eating behavior and, 123–29, 141
- effects, 7–8
- inefficiency of, hypothyroidism from, 261–63
- infertility and, 216–17, 219
- levels, 103
- metabolic rate and, 8, 29–30, 121–25, 141
- normal range, 232, 247, 248
- redefining, 249–51
- PMS and, 197–200
- radioiodine treatment and, 286–87
- regulation, 29–30
- serotonin production and, 87–88, 93, 99
- sex drive and, 145–47
- for weight control, 348
- Thyroid imbalance, 3–19
 - anxiety and, 8, 9, 10, 11, 14, 90–93
 - autoimmune, 31–33, 238–42
 - causes, 16–18
 - chronic fatigue syndrome and, 180–82
 - conditions associated with, 238–45
 - curing lingering effects of, 291–93
 - cyclothymia and, 97–98
 - depression and, 8–11, 77–89, 102–6, 109, 112
 - emotions and, 8–11, 18, 22
 - fatigue and, 8, 9, 10, 11, 170–89, 248, 252–53, 257, 258
 - fibromyalgia and, 176–80
 - immune system and, 16–18, 19
 - long-term effects, 245, 305–7, 322
 - menopause and, 201–9
 - menstrual problems and, 13–14
 - misdiagnosis and, 4–6, 8–16, 18, 24, 26, 37–38, 371–72, 386
 - mood swings and, 81, 93–99, 112–13
 - PMS and, 197–200
 - polycystic ovary syndrome and, 138–41
 - pregnancy and, 211–19, 288–89
 - relationships and, 157–69
 - reproduction and, 211–19
 - risk for, 239–45, 327
 - sexual effects, 142–56
 - stress and, 8, 9, 17, 20–36
 - symptoms and, 3–4, 7, 8, 15, 20
 - tests and diagnosis, 231–46, 247, 249–50, 252
 - T₄/T₃ therapy for, 314–26

- treatment, 265–91
 - weight gain and, 8, 9, 119–20, 123–25, 127, 138–41, 248, 257
- Thyroiditis, 73, 249
 - Hashimoto's (*see* Hashimoto's thyroiditis)
 - postpartum autoimmune, 222–23
 - silent, 73, 259–60
 - subacute, 73–74, 237, 259, 260
- Thyroid neck check, 235–36
- Thyroid shadow syndrome, 78–81
- Thyroid-stimulating hormone (TSH), 15, 29–30, 52–54, 70, 87, 103, 105, 197–98, 232, 340, 345, 370, 371, 375, 380
 - blood levels, 232–35, 246, 247, 249–50, 267–74, 315–17
 - effect of drugs on, 233
 - fluctuations in, 250, 252
 - monitoring, 260, 263, 273, 274–75, 288
 - redefining normal range of, 249–51
 - testing, 15–16, 42, 216–17, 232–35, 237, 247, 252, 274–75, 279, 367, 377, 387
- Thyrolar, 316, 320
- ThyroLife products, 263
- Thyro-Tabs, 268
- Thyrotropin-releasing hormone (TRH), 29–30, 212
 - stimulation test, 212, 252, 254, 255
- Thyroxine (T4), 15, 53, 54, 100–106, 109, 128, 130, 200, 232, 261, 262, 268, 286, 293, 314, 317
 - blood levels, 232, 234, 235, 246, 272–73, 276, 315–17
 - free T4, 233, 234, 279
 - role of, 82
 - synthetic, 101, 112, 130, 263, 268–72, 314–15, 317–21
 - test, 53–54
 - T4/T3 therapy, 314–26
- Tibolone, 209
- Tiredness. *See* Fatigue
- Tocopherols, 335
- Topiramate, 111
- Transthyretin, 104, 105
- Tranlycypromine, 298
- Trazodone, 299, 301
- Treatment, 265–91
 - Barnes and Wilson methods, 275–77
 - chronic fatigue syndrome, 181
 - depression, 88–89, 101, 104, 106–15, 255–56, 297–303, 311, 325–26
 - eye disease, 356, 358–62
 - fibromyalgia, 177, 179–80
 - finding the right doctor, 266–67, 289
 - growth hormone, 176, 180
 - hormone, 14, 154–55, 176, 200, 202, 205–9, 274, 310–11
 - hyperthyroidism, 277–87, 289
 - hypothyroidism, 263, 267–77, 288–89
 - incorrect, 4
 - for lingering effects of thyroid imbalance, 291–313
 - menopause, 205–9
 - PMS, 200–201
 - postpartum depression, 227–28
 - testosterone, 154–55
 - T4/T3 therapy, 314–26
 - thyroid cancer, 365–82
- TRH. *See* Thyrotropin-releasing hormone
- Triglycerides, 47, 122, 134, 137, 309
- Triiodothyronine (T3), 15, 50, 100–106, 109, 123, 128, 130, 177, 200, 262, 268, 293, 315, 376, 380
 - blood levels, 232, 234, 235, 272–73, 276, 315–17
 - compounded slow-release, 320
 - deficit, 316–17, 319, 325
 - for depression treatment, 106–8, 113–15
 - for fibromyalgia, 262
 - free T3, 234, 279
 - need for, 316–19, 324
 - role of, 82, 261
 - synthetic, 101, 106–8, 113–15, 276–77, 315–21
 - T4/T3 therapy, 314–26
 - T3 uptake, 234, 235
 - for weight control, 348
- Trimipramine, 298
- Tropisetron, 179
- Tryptophan, 302, 303–4, 329

TSH. *See* Thyroid-stimulating hormone
 T3. *See* Triiodothyronine
 Tyrosine, 82

U

Ultrasound, 207, 237, 238, 283–84,
 350, 364, 366, 367, 370, 371,
 382
 Underactive thyroid. *See*
 Hypothyroidism
 Unithroid, 268
 Uterine cancer, 207

V

Vagifem, 155
 Vaginal infections, 149
 Vaginismus, 151
 Valium, 270, 302
 Valproate, 110, 111
 Valproic acid, 111, 113
 Vegetables, 131, 132, 133, 310, 331
 Venlafaxine, 298, 300
 Violence, 163–64
 Viruses, 23, 32, 39, 173, 177
 Vision problems, 15, 352, 355–61
 Vitamins and minerals, 18, 131, 132,
 135–36, 141, 177, 227, 262, 263,
 362
 antioxidants, 262, 263, 331–38
 deficiencies, 18, 19, 181, 240, 331–36,
 340–42
 foods rich in, 337
 optimal daily supplement levels,
 337–38
 vitamin A, 18, 39, 104, 262, 331, 334
 vitamin B, 18, 39, 136, 181, 201, 307,
 308, 309, 331–36
 vitamin C, 18, 136, 181, 227, 308,
 331–32, 335, 336
 vitamin D, 18, 19, 177, 201, 240,
 341–42
 vitamin E, 308, 331, 332, 334–35
 Vitiligo, 240
 Von Basedow, Carl Adolph, 7
 Von Basedow's disease. *See* Graves'
 disease

W

Warfarin, 345
 Wartime stress, 30–33
 Wechsler Memory Scale, 48
 Weight control, 8, 129–38, 328
 drugs used for, 121, 122, 128, 137–38,
 348
 improper use of thyroid hormone for,
 348
 supplements and herbs for,
 136–37
 thyroid eating plan, 131–34
 Weight gain, 12, 20, 119–20, 148, 202,
 218, 276, 309, 369
 eating behavior and metabolism,
 121–29, 141
 hyperthyroidism and, 123, 126, 127,
 128–29
 hypothyroidism and, 37, 38, 40, 46,
 119, 120, 124–25, 127, 130, 141,
 148, 248, 257
 in PCOS, 138–41
 persistent, 127–29
 thyroid imbalance and, 8, 9, 119–20,
 123–27, 138–41, 248
 Weight loss, 25, 31, 51, 56, 88, 122,
 310
 hyperthyroidism and, 56, 57, 58, 68,
 70, 74, 125–27
 supplements, herbs, and medications
 for, 136–38
 thyroid eating plan, 131–34
 Weil, Andrew, 22
 Wellbutrin, 298
 Wellness, tripod of, 172–73
 Wilson, E. Denis, 276
 Wilson's syndrome, 276–77
 Women, 43
 autoimmune disorders in, 17
 health care for, 14–15
 infertility and miscarriage,
 211–19
 overweight, 119–20
 PMS and menopause, 193–210
 postpartum depression, 220–28
 sexual dysfunction in, 145–52
 thyroid problems, 191–28
 Women's Health Initiative study, 205,
 206, 209, 311

X

Xanax, 13, 285, 302

X-rays, 75, 339

Y

Yasmin, 140, 200

Yeast infection, 152

Yeltsin, Boris, 5, 46–47

Yersinia enterocolitica, 18

Yoga, 35, 135, 294

Yohimbine, 154

Z

Zinc, 18, 136, 181, 227, 261, 262, 308,
331, 333

Ziprasidone, 110, 111

Zoloft, 104, 255, 297, 299, 326



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